THE AUK:

A QUARTERLY JOURNAL OF

ORNITHOLOGY.

VOL. XXIII. JULY, 1906. No. 3.

SOME LIGHT ON NIGHT MIGRATION.

BY WITMER STONE.

ORNITHOLOGISTS have long been familiar with the phenomenon of night migration; that is to say, we recognize that such flights occur on every favorable night during the period of the spring and fall movements; but it is only the accomplished fact that we are actually able to see — the great host of transient birds that are in our woodland in the morning that were not there the previous day.

The nearest that we can usually come to observing the flight itself is to stand out in the open on some starlit night and listen to the faint chirps that come floating down from the great vault above. We strain our eyes in an effort to catch a glimpse of the throng that we know must be passing overhead, but all in vain, for the migrants of the night are shielded by the darkness alike from friend and foe. To a favored few the opportunity is now and then offered of getting a glimpse of the passing birds. From the top of some lighthouse we may see a few of the transients as they come for a moment within the glare of the lamp and, bewildered, dash themselves against it or pass on again on their course. Sometimes, too, upon the approach of a sudden storm part of the migrants, bewildered and temporarily lost, fly directly against a lighted building or into the illuminated streets of a town or aboard some vessel at sea. Or, again, those who have access to a large telescope may, by keeping it focused upon the full moon as it rises, see a few of the passing migrants as dark specks silhouetted against the bright disk.

The possibility of viewing the main flight as a whole might well be looked upon as an idle dream, and yet this was my privilege on the night of March 27 of the present year.

Shortly after eight o'clock in the evening there occurred in the western part of the city of Philadelphia, within half a mile of the historic Bartram's garden, a great conflagration which burned continuously until noon of the following day. The fire was confined to a lumber yard, one of the largest in the city, and between four and five acres of thoroughly seasoned hardwood lumber were burning simultaneously throughout the night. The nature of the fuel produced a tremendous illumination with very little smoke — practically none of the dense black clouds that usually accompany fires in a large city.

The sky was brilliantly illuminated for a great distance in all directions, and objects floating overhead, such as scraps of flying paper, reflected the light as if aflame. Early in the night, numbers of bats, doubtless driven out when the sheds caught fire, were to be seen, and some English Sparrows, which had probably roosted among the lumber piles, were circling about thoroughly bewildered, looking exactly like flying embers, so brilliantly did their breasts and wings reflect the glare of the flames.

Presently I realized that the birds were increasing in numbers, that the bulk of them were not English Sparrows, and that instead of the bewildered, aimless flight of these miserable foreigners they were passing steadily across the heavens from southwest to northeast. At ten o'clock the flight was at its height and I estimated that two hundred birds were in sight at any given moment as I stood facing the direction from which they came with the fire to my left. They flew in a great scattered, wide-spread host, never in clusters, each bird advancing in a somewhat zigzag manner, just as flights of warblers or finches pass across the open from one copse or thicket to another. Far off in front of me I could see them coming as mere specks, twinkling like the stars, and gradually growing larger as they approached until their wings could be distinctly seen as they passed overhead. For some distance to the right they could be seen passing steadily on, those most remote appearing and disappearing as their moving wings caught the reflection or lost it again.

Over all the illuminated area, and doubtless for a great distance beyond, they seemed about evenly distributed, those immediately over the flames glowing like coals of fire, those further away appearing silvery white.

I could only guess at the species, but to all appearances they were mainly finches, probably Tree Sparrows, Juncos and the like, while some were noticeably smaller. A few larger individuals, with a continuous rapid wing motion and heavy bodies, I took to be Woodcock or Rail. Far up in the air a Sharp-shinned Hawk circled for some time, doubtless drawn by the light, and two flocks of American Mergansers passed, going at right angles to the migratory flight and evidently passing from the river to the reservoirs in Fairmount Park where they find a safe and sheltered retreat.

I am inclined to think that the migrants were not influenced by the fire so far as the direction of their flight was concerned, as those far to the right were not coming toward the blaze but keeping steadily on their way. The birds, however, were very probably drawn down from a higher elevation by the unusual illumination.

The general trend of the flight was exactly parallel to the Delaware River. Up to eleven o'clock, when my observations ceased, it continued apparently without abatement, and I am informed that it was still in progress at midnight. Conditions were exactly favorable for migration, the mild weather of the few preceding days following the unusually severe weather that prevailed during most of the month; and the peculiarly clear night.

This wonderful sight had one regrettable feature. Occasionally a bird would fly over at a much lower altitude than the main body, and if it happened to pass over any part of the burning area it seldom escaped destruction. Up in mid air, apparently clear of flame and smoke, though evidently within range of the terrible heat, a slender thread of silvery smoke came trailing out from the unfortunate bird, like the unfurling of a skein of yarn; it would fly wildly and then, bursting into flame, fall into the roaring furnace below. I saw twenty or thirty birds perish thus during the evening.[1]

[1] Since the above was written I have seen six partially burned birds that were picked up on the outskirts of the fire. Two were Song Sparrows and four were Juncos. About a dozen others that were examined but not preserved were stated to belong to the same species.

Some thirty thousand persons, it is estimated, viewed the fire, and a large number of them saw the birds, but probably very few appreciated the opportunity that was offered them of looking behind the dark curtain which so persistently shrouds one of nature's greatest mysteries, or realized that what they saw was, literally as well as figuratively, 'some light on night migration.'

NESTING OF THE GREAT BLUE HERON IN MONTANA.

BY E. S. CAMERON.

Plates IV and V.

SINCE living near the Yellowstone I have often wondered where the Great Blue Herons (*Ardea herodias*) nested which flew up and down the river, or stood motionless on the sandbars intercepting its brown flood. The different ferrymen, on being questioned, said the birds passed and repassed daily, but could supply no information as to their breeding haunts. Mr. A. C. Gifford of Fallon informed me that he recollected when there were twenty nests in some cottonwoods about two miles below his property, but was doubtful if herons bred there in recent years, and Mr. Dan Bowman had known of one nest on the Powder River in a cottonwood close to his ranch. These were my only records. Accordingly, on May 30 my wife and I rode to the grove indicated by Mr. Gifford and made a thorough investigation, which proved a task of some difficulty on account of the thick underbrush of wild roses, willows, and bulberry bushes, concealing regular pitfalls, through which a horse could scarcely force its way. Part of the wood was made into an island by a small branch of the river (called here a slough), and two pairs of Blue-winged Teal, evidently nesting, were seen,

YELLOWSTONE RIVER, MONTANA, JUST ABOVE THE GREAT BLUE HERON ISLAND.

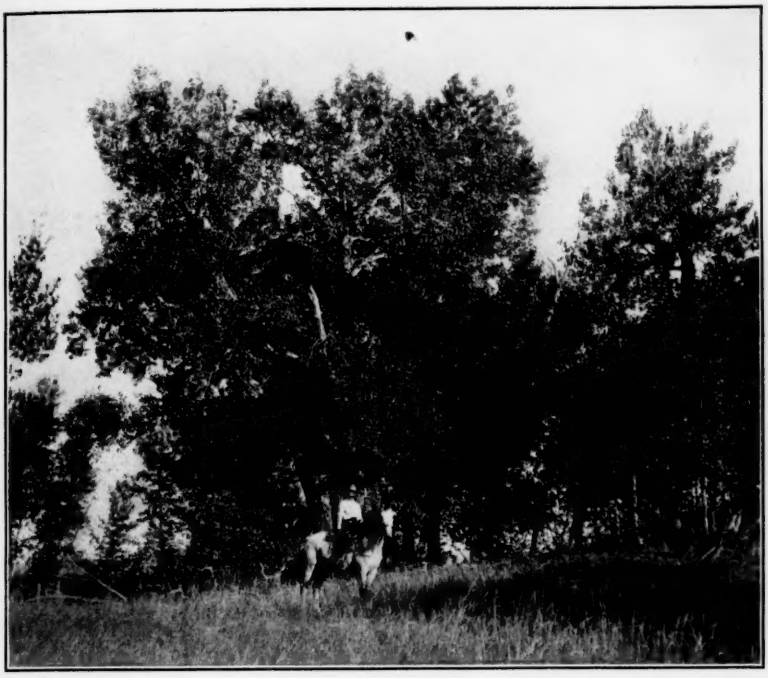

FIG. 1.— SITE OF GREAT BLUE HERONRY, YELLOWSTONE RIVER, MONTANA.
The nests are nearly concealed by the thick foliage.

FIG. 2.—YOUNG GREAT BLUE HERON, TWO MONTHS OLD.

but no trace was found of the heron colony. It was my conviction that, at the present time, herons nested on inaccessible islands in the Yellowstone and that the nests, accordingly, escaped observation, as boats are very scarce in this country.

Last year (1905) I was able to locate a heronry on an island of the Yellowstone about fifteen miles below my ranch, but, previous to the discovery, my friend Mr. J. H. Price had written sending particulars of another which he had visited on Powder River about thirty miles above the mouth. The latter, therefore, received attention first, and on June 29 an expedition was made there, when we found seven nests at the top of two tall pole-like cottonwoods, placed in the extremities of branches so thin that they would not bear the weight of even a small boy. Six of the nests were in a tree at the extreme edge of the river bank and three overhung the water in such a manner that any birds falling out would have been carried away on the swift current. The seventh nest was built at the summit of another tree, directly behind the first, in a dead branch, as also was one of the other nests. All were quite out of reach of the most expert climber except one which was nearest to the first fork of the tree containing six. At our approach nine old birds flew to a sandbar in the centre of the river, on which, later, they were observed to be fishing, but after their departure no sign of life was visible at the nests. A recently dead, full feathered nestling of large size which had been killed by a fall from above lay under the trees. We proceeded to pitch our tent in a glade of the cottonwoods, choosing a situation about a hundred yards off where unobstructed observations could be made on several nests through binoculars. It was found that the birds, both old and young, were extremely wary, so that until all talking and camp preparations ceased there was no sign from either. With such a small number of nests the peculiar odor of decaying fish from the heronry, although strong, was not very unpleasant. After a long period of silence the young herons, becoming hungry, stood quite erect, when it was seen that five nests contained four birds in each and the remaining two but three occupants. It is a likely supposition that all seven nests, at first, held four birds each, as the nestling picked up under the tree accounted for one, while another might easily have fallen into the river.

The young herons presented a remarkable sight, as in their eagerness to see the parents arrive they stretched their long necks to the fullest extent and with bills pointing straight up in the air looked from below like so many snakes. This extraordinary attitude is shown at the left hand branch in the photograph of the tree top (Plate V), but it was found impossible to obtain a near view because at the slightest unfamiliar sound the young herons crouched down as low as possible, maintaining complete silence. This, no doubt, accounted for none being seen upon our arrival, but it seemed strange that such large birds could hide so easily and, subsequently, their ability thus to conceal themselves appeared to me the most striking feature about them. That three or four young herons could make themselves invisible from below in quarters only large enough for one bird, as shown by the photographs, was little short of incredible, nevertheless, they managed to do so. On the first day of our arrival a thunderstorm cooled the air, but next morning, the remarkable effect which the hungry young herons produced was further increased by the rapid inflation and contraction of their gullets as they panted in the hot sun. They seemed to suffer as much as the young Golden Eagles (see Auk, Vol. XXII, p. 162), and, from their situation, being exposed to all vicissitudes of weather, it is certain that the parents shaded them during intense heat. When unalarmed they kept up a continuous soft croaking like frogs which, on the appearance of the parents, was changed to a vociferous quacking like the ducks in a farm-yard.

I was informed by Mrs. Murphy, who lived at a ranch near, that this heronry was established here for the first time and that three of the birds began to lay on April 23, when only three nests were completed. As the period of incubation is about 28 days some of the young herons were now five weeks old. We arrived at the heronry at 2 P. M. and the old birds could not summon sufficient courage to recommence feeding their young for four hours, during the latter part of which time my wife and I remained quiet in the tent. The herons flew from the river directly to the nests, but, too cautious to alight immediately, circled round and round above the trees uttering a harsh low croak recalling Canada Geese. Even after the fears of the majority had been allayed, several herons continued circling, passing frequently within gunshot of the tent,

which they regarded with such suspicion that a sentinel was perched on a high bough keeping watch on it each time that the nestlings were fed. From this time (6 P. M.) until 11 P. M. the parents catered to the wants of their offspring, and since out of a total of fourteen old birds only three or four came at one time, the operation was practically incessant. After dark the arrival of the parents was signalled by the quick transition from a temporary lull to the furious quacking above mentioned on the part of the young birds. The latter were fed on the small fish known as 'suckers' here, and are able to manage quite a large gullet-full, two of the fish which fell under the tree being seven inches long. Both parents alternately fed the nestlings, nor would it have been possible otherwise. Between the screaming, flapping, and struggling of the young to be fed, their rivalry for the first fish, and the efforts of the parent to satisfy them it seemed as though the frail bough must break under their united weight.

As is well known, herons feed their young by regurgitation and the end of the process has been thus graphically described: "The struggle between the young heron and the parent seems like a wrestling-match, the former standing up almost as high as the latter, the tree swaying to and fro, and both birds staggering upon the nest to such an extent that the mother is occasionally compelled to step off and stand on one of the branches to avoid falling. This struggle occurs when all the food has been given, and the mother is seeking to extricate her bill from that of her young." [1]

On this occasion the nestlings became so excited as to leave the nest altogether for the branch, and only saved themselves from a fall into the river below by the combined use of bill, feet, and wings. In a long-legged bird like a heron these arboreal gymnastics are very curious to witness, and are sometimes unsuccessful, as evidenced by the many bodies found beneath the trees in large colonies.

The only accessible nest in the colony of which I am now writing contained three large full feathered young belonging to the same brood as the unfortunate bird which had fallen under the tree. As it was impossible to make a photographic exposure of them *in*

[1] Water Birds of North America, by Baird, Brewer, and Ridgway, Vol. I, p. 19, 1884.

situ one was lowered to a broken cottonwood stump underneath the nesting tree. The bird, however, though it could stand so erect in the nest, refused to do so for even the fraction of a second outside, and as no amount of coaxing, nor our absence, had any effect in altering its intention, only a picture of the crouching pose could be obtained. The temporary removal of this young heron caused one of its companions to leave its own nest and climb much higher up to enter another. Several times it seemed likely to fall into the water but managed to regain its balance with violent flapping of wings. Later, when all was again quiet, the four real owners of this nest stood erect indignantly protesting at this outrage on their rights, and one bolder than the rest endeavoured to eject the intruder. The new-comer as valiantly resisted, and being of the same size a protracted and most extraordinary battle ensued which I witnessed through my binoculars. The birds would feint, and spar for a hold, until one was able to seize the other by the neck when, exerting all its strength, it endeavored to drag its antagonist over the side of the nest. Both in turn had the advantage and swayed backwards and forwards, while the three non-combatants crouched down in characteristic fashion, so that the battle was waged partly on their bodies and partly on the edge of the nest. The fight was continued until an old bird arrived with fish, when the five nestlings again stood erect, and, in the general scramble for food, the parent fed all without discrimination. As it became too dark for binoculars I saw no more that evening, but next morning the duel was renewed until the interloper became exhausted, and, being driven from the nest, scrambled down the branch to its rightful abode. As far as I could see, all the other young birds lived in perfect harmony.

The bill of young herons is a most formidable weapon, and in handling them much greater precaution is necessary than in the case of immature hawks or eagles; for they occasionably strike at the face and might easily cause the loss of an eye. The description of a young heron is as follows: — Age, 5 weeks; length from point of bill to end of claws, stretched out, 42 inches; wing, 12 inches; tarsus, $5\frac{3}{8}$; bill, $5\frac{3}{8}$; weight, 4 lbs. The prevailing color of the bird is slate gray, the feathers of the lesser wing-coverts and neck edged with chestnut, while the primaries and secondaries are

black. A number of feathers at the bend of the wing are white, broadly edged with bright chestnut. Below, the bird is mixed black and white with traces of chestnut. The chin is white and the crown black with only the commencement of a crest which is just beginning to grow. The tibiæ are pale chestnut; their bare portions pale green; the tarsus and feet slate gray. Upper mandible, black; lower, yellow. Irides, yellow.

This description would also serve for the bird at two months old, excepting that the occipital plumes are then well developed.

The island heronry in the Yellowstone was, of course, in a much more inaccessible and romantic situation which in the absence of a boat could only be reached on horseback when the river was low. Indeed, at certain times the densely wooded island was under water, this being the case when the herons first commenced building operations. The existence of the nests could only be suspected by watching the birds flying to them, for, though it was possible to make out two of the highest with extremely powerful binoculars, the heronry, on the whole, was well hidden by cottonwoods from ordinary observation. We visited this island on July 30, when the stream separating it from the north shore was narrow and only girth deep. During the June rise, a few weeks earlier, it would have been about 250 yards wide. For a short distance after landing it was necessary to force a way through willows as high as the rider's head, but otherwise there was little underbrush on the island, which extended to about a quarter of a mile each way, and was everywhere carpeted with a luxuriant growth of golden-rods, wild rye, and tall sand-grass. A few thickets of bulberry bushes could easily be avoided.

The heronry contained altogether eighteen nests, which were placed in the tallest trees on a sandbank sloping gradually to the main channel of the river, here about 300 yards wide. In two trees, containing altogether ten nests, several could be reached by climbing, the trunks in this case being so close together that the topmost branches intermingled. The distance from these nests to the ground was fifty measured feet. On our arrival numbers of the fully fledged young stood at their nests causing an effect which, when seen through the leafy screen, against an intensely blue sky, recalled the pictorial achievements on Japanese china. All, except two or three which scrambled back into the nests, flew away upon

our approach, but it was subsequently found that they returned here every evening to roost. Two dead, well feathered nestlings, eggshells, and some dried up fish lay under the trees. That night we rode to a ranch, about two miles off, for shelter, when the owner told us that herons had bred on the island for many years, repairing and adding to the old nests every spring. He said that formerly there were about fifty nests, but that, some years since, a man had cut logs on the island, thereby causing many birds to desert it. Beyond this, the herons had met with little or no disturbance, as scarcely anyone knew of the colony, which I could well believe. We also learned that the heronry mentioned by Mr. Gifford had been entirely deserted on account of tree-felling operations, shy birds like herons having been unable to endure such invasion of their sanctuary. As we sat on the veranda at dusk herons were seen flying low across the meadow to the heronry; we computed that both from here and the Powder River they sometimes go twenty miles from home in their search for food. Although the heron appears to fly so slowly it is in reality one of the swiftest of birds, and Sir John Sebright referring to the chase of the common Heron of Europe with Peregrines remarks:

"The falconers place themselves in the open country, down wind of the heronry, so that when the herons are intercepted on their return home, they are obliged to fly against the wind to gain their place of retreat.... When the heron flies down wind he is seldom taken, the Hawks are in great danger of being lost, and, as the flight is in a straight line, it affords but little sport."[1]

Of all birds a Peregrine is probably preëminent on the wing, the speed attained by it being incredible. My brother has seen both the Golden Eagle and the Peregrine (times out of number) hawking game in Argyllshire, and in his opinion the Eagle, though rapid, is visible comfortably to the eye, while the Peregrine passes like a streak of lightning. Furthermore the quarry pursued by the Eagle (a cock grouse), seemed to be travelling well within himself, like a hare pursued by a lurcher. The same quarry pursued by the Peregrine, on the other hand, goes "all out," and attains a blind velocity like a bullet — instance, a Blackcock which

[1] Observations on Hawking.

shot through a sheet of ¼ inch plate glass into Mr. Henry Evan's drawing room (in the island of Jura), left a clean round hole in the glass, and was picked up inside the room, a crumpled mass of blood and feathers.

To return to the heronry: half of the next day was spent here, but it was found that all the herons were, if anything, more shy than those on the Powder River, although we ascertained that three nests contained three full-feathered birds in each, which had not yet flown. One of these, placed at the extremity of a dead branch free from surrounding foliage, showed clear cut against the sky, and lent itself better to photography than any nest we had seen. Every effort was, therefore, made to obtain a picture of this nest with the young birds standing erect in it, which might even have been accomplished from the ground had they shown themselves a little more complacent. After focusing with an 8 by 10 camera and inserting the plate we retired for three hours in order to restore confidence to the herons if possible. Pleasant it was to lean against a fallen cottonwood by the softly murmuring river, and watch it ripple on the yellow sand where Spotted Sandpipers ran about industriously, or jerked their tails in company with their newly fledged young. The air was full of bird voices; in the trees overhead Arkansas Kingbirds chattered and fluttered, solicitous for the safety of their broods, although the young birds could now fly. Occasionally an excited heron wheeled above them, but I noticed that these audacious flycatchers refrained from attacking their long-legged island comrades. Here was indeed a great variety of bird life: we saw a Belted Kingfisher come to the island and a Bonaparte's Gull fly slowly past, both rare on the Yellowstone. At the expiration of the above-mentioned time we returned to the heronry, but the nestlings still persisted in their squatting attitude and the old birds kept away. When it was sought to make an exposure of the nest from the adjoining tree two of the nestlings flew clean away, but the third remained, and might pass in the resulting photographs for an adult heron incubating her eggs.

On September 24, Lance Irvine, foreman of the Crown W ranch, and T. Hughes Parry were returning from Macrae's ranch where they had been branding foals for Mr. J. H. Price. As they rode up Spring Creek, which empties into Fallon Creek, a flock of large

birds, flying very low, was observed to be approaching from behind. Under the impression that these were early arrivals of the Canada Geese the two men stopped to watch the flock, which then swung round and alighted in two divisions on the open plain. Upon riding close to them it was found that the birds were not geese but herons walking about on the prairie in two parties of eight and fifteen — making twenty-three in all. They were engaged in feeding; it was supposed upon grasshoppers. A high northeasterly wind accounted for the herons flying so low. The conclusions to be drawn are: (1) That this was a body of migrant herons on their first flight from the Yellowstone heronry, the place where they alighted being about fifty miles due south of this nesting site. (2) That herons from a particular heronry do not all go south at the same time; and that the young birds probably do not cover more than fifty miles on the first trip, as shown by the fact that the flock alighted (evidently for food and rest) despite the proximity of the horsemen. (3) That herons migrate by day, and not necessarily by night.

The nests of Great Blue Herons, in Montana, are made entirely of dead cottonwood sticks, without lining of any kind and white-washed by the excrement of the birds. Although at first bulky structures, they are so constantly knocked about by high winds and the trampling of the herons that very few retain their original proportions by the time that the young can fly at two months old. The dimensions of an average nest which I took were: diameter of greatest width across sticks, 3 feet 2 inches; diameter of cavity, 16 inches. As pointed out by Mr. Seebohm, the Great Blue Heron (*Ardea herodias*), and European Blue Heron (*Ardea cinerea*), build their nests by placing sticks around the centre so as to form arcs, differing thus from the Night Heron, and some other species, which arrange the sticks outwards from the centre so as to form radii. The European Blue Heron is very much like the American species in appearance and habits excepting that in the former the tibiæ and border of the wing are white while in the latter they are purplish-cinnamon or rufous.[1]

It would appear that Montana Herons are desirous of placing

[1] Water Birds of North America, by Baird, Brewer, and Ridgway, Vol. I, p. 5, 6.

their nests as near the water as possible which is not the case in Scotland. There are no less than three heronries near the residence of my brother in North Argyll where herons are exceedingly numerous and resident all the year round. He has had unusual opportunities for observing them and has sent me some most interesting notes. He says: "Our herons undoubtedly prefer to build in conifers, always choosing open situations, generally on high ground, and in associations varying from two or three nests to twenty or thirty together."

The second largest heronry within his knowledge "is in very old and very tall larches, high up on the face of a mountain which forms one side of a deep and luxuriantly wooded glen. Here the herons have selected the larch in preference to equally suitable pines at a lower elevation and nearer the mouth of the glen, but, possibly, the immediate proximity to the pines of a populous rookery may have had something to do with the choice. The larch, though deciduous in foliage, is the earliest tree to sprout in spring, and becomes handsomely feathered with green shoots before the herons are seriously occupied with family cares." Herons in Argyllshire pair very early in spring, and my brother has observed young birds hatched out on April 25. He has supplied me with the following account of another heronry in marked contrast to the haunt just described. "A heronry on my brother-in-law's estate in the Island of Jura occupies a deep cup in the bed of a mountain torrent, at the base of a high waterfall which has evidently in the course of ages hallowed out the cup. The nests are here placed on low, scrubby bushes of birch and goat willow, only a few feet from the ground, and easily accessible from the bed of the burn. The sides of the cup are so steep and deep that a person standing on the brink can look down upon the herons nesting below, and splendid observations could be taken but for the difficulty of suitable accommodation on the ground. Above the heronry, at no great distance, is a chain of lakes full of excellent trout, and round about are large herds of wild red deer — this romantic spot being in the heart of the Jura deer-forest."

Though I have never known it to be fired at with any kind of weapon the Great Blue Heron is an extremely shy bird and seems by some instinctive process thoroughly to gauge the killing range of

an ordinary scatter-gun. On the broken winding shores, however, which are characteristic of Montana rivers, often clothed with wood, or buttressed with badland rocks, there is little difficulty in approaching this solitary, meditative bird, who has no friend to warn him, and whose self-absorption at his lonely meal is so complete. He can be descried half-a-mile away and stalked warily from the rear, what time his eager gaze betokens the immediate proximity of some precious stream-borne prey.

It is from this cause, too, that private property is so great a protection to the herons on West Highland sea-lochs. The tourist collector can mark his quarry from the deck of his yacht, but he hesitates to land to achieve its destruction, and herons can rarely be shot from a boat.

THE CATALINA ISLAND QUAIL.

BY JOSEPH GRINNELL.

SIX specimens of quail from Santa Catalina Island, California, present characters constantly different from those of the series of mainland quail examined. While the degree of difference is not great, it requires no straining of the eyes to distinguish them. The differences seem to be significant of insular isolation under the peculiar set of factors which have resulted in differentiating many other species of animals and plants on the same island. It is convenient that the quail also be provided with a name, and I propose the following:

Lophortyx catalinensis new species.

SPECIFIC CHARACTERS.— Similar to *Lophortyx californicus vallicola*, but about 9 % larger throughout, and coloration somewhat darker; similar to *L. c. californicus*, but larger and much less deeply brownish dorsally.

TYPE.— ♂ adult; No. 6134 Coll. J. G.; Avalon, Santa Catalina Island, California; November 25, 1904; collected by J. Grinnell.

MEASUREMENTS.— In millimeters; the difference in dimensions between males and females of *L. c. vallicola* is so minute, that the two sexes are lumped together.

	Sex	Wing	Tail	Culmen	Depth of Bill	Tarsus	Middle Toe and Claw
Coll. Howard Wright	♂	113.5	104.5	10.3	7.0	31.0	38.5
Coll. Howard Wright	♂	116.0	103.5	10.2	7.7	30.1	37.0
No. 6134 Coll. J. G.	♂	119.7	110.0	10.7	8.0	32.0	39.5
Coll. Howard Wright	♀	118.0	105.0	10.3	7.7	30.1	38.0
No. 6136 Coll. J. G.	♀	117.0	104.0	10.9	7.6	30.8	37.3
No. 6135 Coll. J. G.	♀	116.5	103.0	10.6	7.8	31.5	39.0
Average of the above 6 skins from Catalina Is.		116.8	105.0	10.5	7.6	30.9	38.2
Average of 21 skins, both sexes, from mainland of southern California		107.1	95.0	9.8	6.8	29.2	35.1

REMARKS.— The bulkiness of *catalinensis* is at once apparent when one sees it among specimens of the mainland *vallicola*. The tail is particularly long, the rectrices being proportionately broader. The bill is heavier, and the toes and tarsi decidedly stouter. These characters hold equally in the males and females. In coloration *catalinensis* shows a deepening of shades especially on the lower surface. In both sexes the flanks and lower tail-coverts are more broadly streaked with brown; the terminal black edgings of the lower breast feathers are broader, and the light markings beneath are suffused with deeper ochraceous. Especially in the female of *catalinensis* is the lower surface darker than in *vallicola*, due to the encroachment of the dark portions of each parti-colored feather upon the light part. The dorsal surface is not however much browner than in *vallicola* — it is decidedly slaty as compared with the deep bright vandyke brown of *californicus* from the vicinity of San Francisco Bay.

Mr. H. C. Oberholser comments (Proc. U. S. Nat. Mus., XXII, 1900, p. 229) on "one male and one female from Santa Catalina Island. They seem rather darker and more ochraceous than extreme examples of *vallicola*, but are identical with birds from the San Joaquin Valley. The species has probably been intro-

duced from the mainland." No mention is made of measurements. I do not know where the type-locality of *vallicola* is. Nothing more exact has been published than "interior valleys of California," as far as I know. I am using skins from the San Gabriel Valley, Los Angeles County, as typical of *vallicola*.

In 'The Auk' (Vol. XV, July 1898, p. 234) I made the statement that "The 'Quail' is not native on the [Catalina] island, but was originally introduced from the mainland." This assertion I now wish to retract. It *may* be that quail from the mainland have been liberated on the island, as I have been repeatedly informed. But when I followed up these rumors, I never obtained any definite information to confirm them. Moreover, as stated beyond, I now have good reason to believe that quail were on the island before the advent of white men. It seems to be "natural" for the usual observer to conclude that quail could not have been native on the island. For instance, Cooper (Orn. Cal., 1870, p. 550) says: "It is also numerous on Catalina Island, but was probably carried there originally, as a flight of eighteen miles at once would probably be too far for a bird with so short wings." But there are many animals on the island which are undoubtedly native, being of such habits and character that only by natural means can their presence be accounted for. Geologists tell us that evidence points towards a time when the Santa Barbara Islands were a part of the mainland. This would easily explain the origin of their fauna and flora, the components of which are in so many instances slightly differentiated from their mainland representatives. In view of the differences characterizing the Catalina Island Quail it seems to me most probable that they belonged to the original fauna.

On August 16, 1905, I interviewed an old-timer by the name of James C. Johnston, who now lives on his ranch at Cactus Flat, in the San Bernardino Mountains. "Captain" Johnston went to Catalina April 15, 1859, and lived there 21 years. I saw the remains of his old home at Johnston's (Johnsons, on the maps) Harbor on August 31, 1903. Captain Johnston affirmed to me that quail were already on the island when he went there in 1859, and that he and the other sheep-men had always considered them to be native. He never knew of any having been brought over from the mainland. I believed him implicitly, as he told me many

things about the natural history of the islands which coincide in detail with my own observations.

Professor Chas. F. Holder, an authority on the natural history and ethnology of the California coast islands, believes the quail to be native on Catalina Island. He assures me (in a letter dated April 8, 1906) of their constant abundance there from the time of his first acquaintance with the island 21 years ago.

Therefore the characters of *Lophortyx catalinensis*, as here pointed out, appear to be significant of long isolation, rather than of acquisition within a few years.

Pasadena, California.

ISOLATION VERSUS NATURAL SELECTION.

BY LEONHARD STEJNEGER.

In a recent paper in 'The Auk' (XXIII, April, 1906, pp. 161–171) Mr. Hubert O. Jenkins has given a very instructive account of the 'Variation in the Hairy Woodpecker (*Dryobates villosus* and subspecies)', accompanied (p. 163) by a map of the geographical distribution of the various subspecies recognized by him.

In looking at the map I was forcibly struck by the fact that the boundaries of the various forms do not coincide with those of the various 'life zones' commonly recognized by North American zoölogists. The nearest approach to such a coincidence is the range of *Dryobates villosus leucomelas* and the so-called boreal zone. In the United States the other subspecies show a certain agreement with the two main east and west divisions of the transcontinental belts, the humid and the arid divisions of the transition, upper austral and lower austral life zones. It is a curious fact, however, that while the zoölogists do not recognize an east and west division of the boreal belt, the distribution of the woodpeckers in question clearly indicates that the Pacific slope of the continent included in the boreal zone has some forms as markedly separated from the eastern forms as those further south.

Apparently then temperature, as indicative of the life zones, has very little to do with the distribution and differentiation of these races of woodpeckers. On the other hand, the transverse lines which Mr. Jenkins has drawn on his map "separating forms of equal size" in showing a gradual increase of size northward point to thermal influences, although they do not present any special agreement with the lines on the zonal maps.

Nor do the east and west forms find a ready explanation in the humidity or aridity of the climate, as the western form *D. v. harrisi*, which enjoys a climate fully as humid as typical *D. villosus* in the northeastern United States, is the one most removed from it in color characters. It is true that the western forms to some extent correspond to the humid and arid districts of the Pacific slope in as much as the dark underside of the large northwestern *D. v. harrisi* in a general way coincides with the extent of an annual rainfall of over 50 inches. It is also true, that the range of the small southeastern *D. v. auduboni* falls inside the area in the east having a rainfall of over 50 inches, but the latter amount of precipitation is also found over larger areas inhabited by typical *D. villosus*.

As we go south into Mexico and Central America we meet an increasing darkening of the underside through *D. v. intermedius* to *D. v. jardinii*. This darkening is plainly connected with the increasing amount of the annual precipitation which exceeds 50 inches considerably.

We can thus, in a general way, trace the influence of present climatic conditions in the formation of some of these races, in as much as those distinguished by a darkened underside inhabit districts having a yearly rainfall of 50 inches or more. Present temperature conditions apparently play a very subordinate rôle, except that the size of the various forms gradually increases from the warmer to the colder regions, but apart from the fact that this increase in size can only be very indirectly caused by the temperature, the difference in size is not diagnostic of the various forms, that is to say, the northern individuals of each form are larger than the southern ones (see Jenkin's table on p. 171, showing an average greater size of *D. v. hyloscopus* north of 35° N. lat. than south of it), so that the gradual increase in size northward is a gradual increase in the size of the individuals and thus only indirectly of the races.

It is plain then, that of the present climatic factors determining the formation and the distribution of the forms of *D. villosus*, the rainfall is by far more important than the temperature.

If we examine Mr. Jenkins's map further we discover a doubly curved, solid black line running from N. W. to S. E. "separating heavily and lightly spotted forms." East and north of this line we find forms which have the wing feathers spotted with white to the tips, while the races living west and south of the line have these feathers only spotted at the base. Intermediate specimens are found occasionally along this line.

Mr. Jenkins has tried to explain the variations in these birds "through natural selection and the survival of those best fitted to escape from enemies or to obtain food in the particular region that they inhabit," but he does not seem to have much faith in the explanation. As for the spotting, he reasons that the spots "were originally developed for some good service, as for directive markings, etc." The loss of them at the tip he then suggests as due to the protection it would be to the bird to have the folded wings uniformly black so as "to make the bird less conspicuous while climbing up dark colored tree trunks." But he brings down the whole construction very effectively with the following remark:

"Could this theory be absolutely proven we would still have to explain why all of the Hairy Woodpeckers have not developed in like manner. If we draw a geographical line between light and heavily spotted forms this line would in part coincide with the geographical line between the Arid West and Humid East. But I greatly doubt if aridity and humidity have anything to do with the wing spotting.[1] We might say that the more highly developed form has had more enemies and more competition, but such a statement needs yet to be proven."

Mr. Jenkins in offering his explanation labors under one fundamentally erroneous notion, viz., "that the western bird is more highly developed" (p. 169). He speaks also of "the spots on the inner webs and proximal ends of the feathers" as "more persistent." Evidently he regards the eastern forms with the wings spotted to the

[1] He might have added that plainly it has not in this case, since *D. v. harrisi*, which inhabits the most humid region, is also one of the least spotted forms.—L. S.

tip as the original forms, from which the western birds were derived by a reduction of the spots on the distal end of the wing feathers. Just the opposite is the case.

Speaking of the birds in general it may be said that there is an evolutionary tendency towards a uniformly colored plumage as distinct from the dark-and-light (not black-and-white) spotted or striped plumage. This accomplished, the further development tends towards pure white, either as a uniform white plumage or one spotted with pure white. The white spots are not produced by any white coloring matter, on the contrary, they are due to total absence of pigment. Generally speaking they are a degradational development, they betray a structural weakening of the feather. As for the wing feathers this process usually begins at the base of the feathers, a basal white spot being present in many birds although absolutely hidden. A further development of it is the white wing 'speculum' of so many birds. Often it develops still further, but seldom extends to the very tip, unless the whole plumage tends to uniform white, and it is mostly confined to the part of the feather covered by the superposed portion of the next feather. Where the distally increasing whitening of the feather — and we are now coming to the case of the spotted-winged Woodpeckers — does not proceed as a solid white area, but as a series of white spots, the remaining black cross bars have the function of stays or braces. It is easy to understand then why the white spots appear first on the inner webs of the secondaries and last on the outer webs of the primaries or at the tips which extend beyond the plane of the wing when spread for flight.

That this degradation of the feathers in the birds of northern affinities as a rule increases towards the colder regions there can be no doubt, and as for the spotted woodpeckers of the genus *Dryobates* I need only refer to the Siberian and Kamchatkan forms for proof. That this increase in the size and number of white areas is not *directly* attributable to the effect of the cold seems evident (see my Ornith. Res. Expl. Kamtch., 1885, pp. 343–344). Barrett-Hamilton, not long ago, has suggested a theory connecting the absence of pigment with the accumulation of fat in the underlying tissues of the body, but in the woodpeckers at least I fancy it would be difficult to establish such a connection. It seems to me,

however, that perhaps ease of living combined with the cold climate of the North and may be some other less important or more obscure conditions, may account for the phenomenon. It must not be imagined that because the northern birds live in a cold climate they have a particularly hard life. Food is very abundant there, perhaps more so than in the southern latitudes, and the large size of these northern birds may be thus accounted for by the combination of plentiful food and vigorous, energetic exercise necessitated by the cold.

That there is some connection between the more or less heavy spotting and the north-south distribution is very probable. The coincidence of these facts among a large number of species of woodpeckers, especially in Japan, shows this clearly. Let us take a single example from the closely allied genus *Yyngipicus*. Beginning in the Riukiu archipelago with the small dark *Y. nigrescens*, we find, as we go northwards, *Y. kizuki* in Kiusiu and Hondo and finally in Yezo the largest and most spotted of them *Y. seebohmi*, a regular gradation from south to north.

How are we then to explain that the increase of spotting in North America is essentially west-east and not a south-north phenomenon?

We have seen that the present climatic conditions give no clew, but perhaps we may find it in the 'environmental stress' of a previous geological period.

The relation of our spotted woodpeckers to the Old World species of *Dryobates* and the geographic distribution of the latter is such that we must conclude that ours arrived to this continent from eastern Asia, and various considerations make it probable that this immigration took place not later than Pliocene times. We may then assume that previous to the Glacial period there lived in North America a Hairy Woodpecker small of size. The southern specimens probably resembled *D. v. jardinii*, the northern ones were possibly more like *D. v. auduboni*. The advance of the glaciation pushed the woodpeckers southward and in combination with the transgression of the Gulf of Mexico affected a separation of the southern Alleghany region from the western portion of our continent which then as now formed the northern continuation of Mexico. It is well within the bounds of probability that the Hairy Woodpecker which became isolated in the Alleghanian region

belonged essentially to the form which above I have compared to *D. v. auduboni*, and that on the other hand, the one which was forced south in the Sonoran region mostly consisted of scantily spotted southern specimens comparable to *D. v. jardinii*. I feel convinced of the correctness of the hypothesis that it was during this long period of separation that the two main forms, the western and the eastern, finally got established. I am even strongly inclined to believe that by the time of the last retreat of the glacial covering the two forms were so well differentiated that they might be called species rather than subspecies, as these terms are now commonly used. The two now distinct species of Hairy Woodpeckers following the melting ice cap and occupying the forests which gradually covered the reclaimed land finally met along the solid line of Mr. Jenkins's map, assuming a distribution such as we see it at the present day. That the two species which were established through some such separation should intermingle to a considerable extent along their mutual boundary line is quite natural. I leave it to those ornithologists who are more familiar with the forms in question to decide whether the 'intermediate' specimens, where the eastern and western birds come into contact, may not properly be regarded as the result of hybridization. The formation of the three eastern and four western races, chiefly characterized by size, amount of darking of the underside and extent of the white spots, is then subsequent to the primary segregation of the eastern and western species. There is nothing in the quantity or quality of their specialization which contradicts the assumption that they were formed since the glacial period.

The above seems to me to be a much more satisfactory theory as to the origin of the various forms of the Hairy Woodpecker, than the one suggested by Mr. Jenkins. That natural selection at some stage or another in the evolution of these forms, may have exercised an auxiliary influence it is not necessary to deny, but I think there can be but little doubt that 'environmental stress' working on a material possessing considerable plasticity in a certain direction accomplished the 'speciation' of these forms because of their complete *isolation* during an earlier geological period.

SOME NOTES ON INDIANA BIRDS.

BY AMOS W. BUTLER.

Nyctea nyctea. SNOWY OWL.— One reported by Louis A. Test, upon authority of J. Keegan, as having been taken near Washington, Daviess County, Indiana, November 5, 1904.

I saw one in Deschler's Cigar Store, Lahr House, LaFayette, which was procured by Geo. M. Timberlake, from a man who shot it about 15 miles south of LaFayette in the winter of 1901–'02. Beasley and Parr, taxidermists, Lebanon, report that they mounted this specimen in November or early December of 1901. Snowy Owls have been more generally distributed over the State the present winter and more individuals have been reported than ever before since records have been kept.

November 25, 1905, while at Hammond, Lake County, Mr. LeGrand T. Meyer told me that two fine specimens of this bird had been taken near that place a few days before. One of these we saw afterwards in the possession of Mr. Schmid, who mounted it and who also had the other one at the same time in his work room. Mr. Meyer has kindly supplied me with the following data of these, and three other birds of the same species taken in that vicinity:

First: A man by the name of Johnson killed one on November 12, 1905, about a mile and a half southeast of Tolleston, Indiana, in the gravel pits.

Second: Fred Burg shot one on the lake front of Lake Michigan near Indiana Harbor, on November 19, 1905, which is now in the possession of Mr. Louis Freeze of Hammond.

Third: Wm. J. Thompson killed one near Wolf Lake Ice Houses in Hammond, on November 25, 1905. This one was on the top of a telegraph pole when killed.

Fourth: One was killed on Wolf Lake near Lake Michigan, in Hammond, by a person unknown to me, which is now in the possession of Louis Mankowski of this city, which was killed November 23, 1905.

Fifth: At the time it was killed, there was another one with it, which the hunter was unable to secure.

The specimens Mr. Schmid had, were numbers one and four, given above.

Beasley and Parr, Lebanon, Indiana, have mounted quite a number of these birds recently. From information kindly supplied by them regarding specimens in their hands I have been able through extended correspondence to collect some interesting facts regarding this dispersion of these owls over Indiana this winter. They have been reported from the following counties: Allen, Benton, Fountain, Hancock, Johnson, Lake, Marion, Miami, Montgomery, Noble, Shelby, Sullivan, Warren.

H. A. Dinius of Fort Wayne reports that two Snowy Owls were observed on the Godfrey Indian Reservation west of that city, December 22, 1905.

One was shot by Clem Woodhams in Bolivar township, Benton County, November 10, 1905. The same gentleman informs me that one was seen north of Otterbein in that county about December 24, 1905.

One of two owls seen was shot nine miles east of Fowler, in Benton County, November 4, 1905, by a corn husker working for Thomas Eastburn. It was wounded and brought alive to Fowler. The second one was taken afterwards. They are reported to be male and female. They were sent by J. F. Warner of Fowler, to be mounted, who reports on January 4, 1906, another one observed some days before at Earl Park.

J. W. Crouch of Fowler has a Snowy Owl that was killed by Nelson Hendricks five miles west of that place about February 12, 1906.

J. R. Opp has a specimen taken four miles west of Otterbein December 21, 1905. Another was shot near there on December 4, 1905.

One shot November 29, 1905, two miles southeast of Mellott, in Fountain County, by John Whalen, just after dusk, after it had killed two old hens. Mounted for Red Men's Hall at Mellott.

One shot one mile northwest of Fortville, Hancock County, by Ottis Shepherd. Reported by David Fair of Fortville.

John Hammer took a Snowy Owl about six miles south of Franklin, Johnson County. It is now owned by S. B. Eccles.

Gus Habich, Indianapolis, received two of these owls recently. Both were killed about December 1, 1905. One was shot by William Stroble, near Shelby, Lake County; the other by Frank Hoffman, below Shelbyville, in Shelby County, Indiana.

One killed by Isom Kelsey, two and one-half miles southwest of Shelbyville, November 30, 1905.

One killed by John Tucker, four miles north of Fairland, Shelby County, about November 16, 1905. Owned by D. H. Tucker.

One owned by Fletcher M. Noe, Indianapolis, he informs me was taken near Southport, Marion County, Indiana, December 20, 1905. He reports that six or seven have been brought in to him the present fall and winter.

One, a male, killed by Frank Clark in Erie Township, Miami County, December 17, 1905. The next day a female was killed in that vicinity by

Rawley Bunnell. The first one was mounted for the First National Bank, of Peru. Reported by Joseph H. Shirk.

One shot three miles northwest of Linden, Montgomery County, by George Ciderdin, November 22, 1905. Owned by J. M. Hose of Linden.

One killed near Darlington, Montgomery County, November 21, 1905, by N. Royer. Reported by S. G. Kersey.

One is reported by Henry A. Link to have been killed near Avilla, Noble County, Indiana, a few days prior to December 14, 1905.

W. S. Blatchley, State Geologist, has a photograph taken the past fall of a bird of this species in the possession of J. W. Sampson, Farmersburg, Sullivan County, Indiana. Mr. Sampson writes that another was killed at Blackhawk, about six miles east of Farmersburg, about the same time.

John Morgan killed one in Warren County, December 21, 1905.

A fine specimen seen in the window of the Starr Piano Co., Richmond, Ind., was killed by Mr. Edgar Moon near Bowersville, Greene County, Ohio, November 8, 1905. Reported by J. E. Perkins.

Ectopistes migratorius. PASSENGER PIGEON; WILD PIGEON. — Joseph F. Honecker reports seeing a Wild Pigeon with young, near Haymond, in Franklin County, the spring of 1905. There is another record of the capture of a specimen in Shelby County.

Dendroica vigorsii. PINE WARBLER.— C. P. Smith, during the summer of 1904, visited the sand-dunes near Michigan City. There among the pine trees he found Pine Warblers. They were fairly common June 19–23. Though the birds were in full song, he did not find the nest. He describes the song as very similar to that of a Chipping Sparrow, in fact, so similar that he was deceived by it at first. The preceding summer (1903) the same observer, while studying the biology of the State Forest Reserve, at Henryville, saw Pine Warblers three or four times among the pine covered 'knobs.' The last of July he found adults feeding young that were practically full grown. They doubtless nested there.

Pelidna alpina pacifica. RED-BACKED SANDPIPER; AMERICAN DUNLIN.— A specimen taken October 11, 1905, from a flock of shore birds at a pond in Marion County, north of Indianapolis, was presented to me by Philip Baker. This is the first fall record for this vicinity.

Ægialitis meloda circumcincta. BELTED PIPING PLOVER.— A fine group of these birds with four eggs, in the collection of the Chicago Academy of Sciences, was taken at Miller's, Indiana, June 13, 1905 (F. M. Woodruff).

Numenius borealis. ESKIMO CURLEW.— There are few recorded specimens of this rare migrant from Indiana. It therefore is of interest to learn from Mr. J. H. Fleming, Toronto, Ont., that he has one marked Chalmers, Ind., male, April 19, 1890 (?).

Phalacrocorax dilophus. DOUBLE-CRESTED CORMORANT.— Mr. Roman Eichstodt of Michigan City has a specimen taken by him inside the breakwater there, the last of November, 1903. No others of this species were seen.

Sula bassana. GANNET.— A few months ago I was taken to see a bird of this species in the store of Roman Eichstodt, Michigan City, Indiana. It was in immature fall plumage, as determined by the U. S. Biological Survey, to which a photograph was sent. The bird was killed, according to the owner, on Lake Michigan in November, 1904, about two miles from Michigan City. It was said to be unlike anything before seen in that vicinity.

Oceanodroma castro (*Oceanodroma cryptoleucura* Ridgw.). HAWAIIAN PETREL.— A specimen of this rare species, whose distribution seems to be almost world wide, was given to me by Alden M. Hadley, of Monrovia, Indiana. He obtained it from Mr. N. H. Gano, who on June 15, 1902, found it fluttering in a wheelbarrow in his yard at Martinsville, Indiana. He picked up the bird but it soon died. Its stomach was entirely empty and it had evidently died of hunger and exhaustion. The bird was sent to Mr. Hadley, who preserved the skin. It was recognized as a petrel, and the species was kindly determined by Dr. C. W. Richmond of the Smithsonian Institution. Five specimens of this bird, from its collection, were later sent me for examination. The following notes and measurements in inches are given:

Cat. No.	Sex	Locality	Date	Collector	Wing	Tail	Tarsus	Tail
132764	♂	Galapagos	Apr. 4, 1891	C. H. Townsend	6.125	3.250	.937	Slightly forked.
189861	♀	Madeira	Sep. 12, 1902		5.750	3.000	.937	Much worn.
189860		Madeira	Oct. 14, 1902		6.500	3.555	.937	Very slightly forked.
115461		Kauwai, H. I.		Knudsen	5.750	3.968	.937	Nearly square.
154436	♀	Wash., D. C.	Aug. 29, 1893	W. Palmer	6.250	3.125	.937	Nearly square.
		Martinsville, Ind.	June 15, 1902	N. H. Gano	6.000	3.500	.937	

LIST OF THE BIRDS OF LOUISIANA.

BY GEO. E. BEYER, ANDREW ALLISON, AND H. H. KOPMAN.

Part II. — PRELIMINARY SKETCH, CONCLUDED.

(*Continued from p. 15.*)

THE survey of the topographical aspect of Louisiana bird life having been offered in the preceding pages, the introductory matter will now be concluded by presenting the seasonal phases of the avifauna of Louisiana, especially of the southern part of the State.

The main features in the seasonal history of Louisiana bird life will be correctly conjectured from a general knowledge of the breeding and winter ranges of the birds of eastern North America, but there are several peculiar considerations of interest. Preëminent among these are the preponderance of aliens throughout the usually mild winters, the great length of the semivernal period preceding the full course of spring, and the extent of the season of fall migration.

The succession of changes in the status of bird habitation in Louisiana is no less marked than in much more northern regions. Conditions in winter furnish a very convincing proof of this statement. Meteorologically, it is true, the Louisiana winter, especially in the southern part of the State, usually lacks the prime essentials of the season; but speaking from a faunal and floral standpoint, the season is unequivocal. Except for live and water oaks, and pines — the universal evergreens — the arboreal growths are leafless for at least a part of the time intervening between the nominal limits of winter. In many localities the amount of evergreen shrubs is insignificant, and few herbs are perennial. Insect and reptile life is correspondingly dormant. Among the Passeres and nearest allies, the preponderance of winter visitor forms over residents is highly significant. As links between summer and winter bird life, there are practically no forms except a few of the Picidæ and Icteridæ, *Cardinalis*, *Lanius*, *Dendroica vigorsii*, *Geothlypis trichas*, *Parus*, and *Sialia sialis*.

Biotic conditions, especially floral conditions, to be noted in southern Louisiana the first of the year are somewhat perplexing. In point of defoliation and imminence of cold, the winter is just becoming installed, and yet many prevernal indications are to be detected before the middle of the month. Maples and cypresses begin to bloom in the earlier part of the month in the latitude of New Orleans. Tree-toads and even frogs become very vocal if rains come without cold. Very balmy weather frequently occurs within the first week of January. Occasional butterflies, especially *Pyrameis atlanta* and *Callidryas eubule*, possibly hibernants in some cases, but doubtless individuals fresh from the pupæ in many instances, are more apt to be met with than during several weeks past. A few Myrtle Warblers are often in obvious transient progress before the 10th of the month. Yet the ranks of many winter birds are only lately well filled. Robins have about reached their maximum abundance, which they maintain for fully a month longer. Wintering blackbirds, sparrows, kinglets, and Hermit Thrushes do not give the slightest indication of dispersion. The Orange-crowned Warbler, however, which arrives in southeast Louisiana in greatest abundance about the middle of December, is nearing the limit of the time of its greatest abundance in that region. In a normal season it has become inconspicuous by January 20. And this, in fact, is often a decisive date in the season. A second mild spell in January may be expected then, bringing very likely fresh advances of transient Myrtle Warblers, putting the willows into very early leaf, and the elm into bloom, and starting the first flowering of the peach and plum. In pine regions, *Cratægus æstivalis* and possibly one or two other species of *Cratægus* will bloom as early as this, while *Alnus* and *Juniperus* are in flower at least by this time. But the great body of winter bird life, excepting some of the water birds of the lower orders, especially the Anatidæ, is as yet unaffected. Three weeks to a month of weather apt to include a severe freezing spell, are yet ahead. In most respects the growth of the new season is extremely circumspect. Numerous and constant lesser indications of spring are in evidence, and yet substantial vernal progress is extremely slow.

The first few days of February are often notable for rather high temperatures and the appearance of more Tree Swallows than are

commonly to be seen during the winter. A mild spell the latter part of January brings probably the first individuals of this species that have wintered extralimitally. On rather rare occasions the first Purple Martin appears in the earliest days of February. Its arrival is the first prominent incident of migration. Usually however, it does not appear, or is not seen, until the middle of February or even subsequent dates in that month. Its movements are sometimes much upset by very heavy freezes that visit even the southernmost part of the State, as on February 9–16, 1895 (with 10½ inches of snow at New Orleans) and February 13, 1899 (with a min. temp. of 7 degrees at New Orleans). Heavy freezes have not occurred within recent years, if at all, later than February 17. By February 20, the aspect of spring is usually very pronounced in the lowland woods of southeast Louisiana. Flocks of transient Myrtle Warblers are now conspicuous. Robins are beginning to show some decrease; transient Catbirds appear occasionally; in an exceedingly mild and early season, 1893, several Parula Warblers were observed on February 22, but this date is rather extraordinary by comparison with normal dates of arrival. The cypress and late willows leaf out at this time. Cardinals, Tufted Titmice, Mockingbirds, and Carolina Chickadees begin to sing vigorously After this there is small probability of the season's receiving further set-backs.

The first completely vernal weather, all factors considered, comes usually by the 3d or 4th of March. Weather of this kind is established but a day or two before the certain arrival of the Parula and Sycamore Warblers. The first extensive flights of Limicolæ, especially *Tringa maculata*, *Totanus*, and *Bartramia*, reach the coast districts of Louisiana. Yet the migrations are not given very decided impulses for some time longer. The number of migrants in the first half of March seems by no means commensurate with the prevailing temperatures and the rapid growth of plants. Migrational activity during this period is usually most noticeable about March 10. Purple Martins, which become generally distributed, though not common, about March 1, now appear in considerable numbers. Parula Warblers grow common. Night Herons and Little Blue Herons begin to arrive. In a normal season the first Hooded Warbler appears.

Usually a third distinct warm period sets in at the latitude of New

Orleans by March 15 or from one to three days later. Sometimes a delayed second warm period takes its place; so that from March 12 or 13 to March 18 there is almost invariably a period of considerable migration. The regular arrivals are the Prothonotary Warbler, the Blue-gray Gnatcatcher, the Chimney Swift, and the Red-eyed Vireo, though the last is frequently not seen until the next 'wave.' Herons and the Limicolæ increase. White-eyed Vireos become decidedly common, the first individuals that winter extralimitally arriving early in March. Hooded Warblers become rather common, and Parulas increase very decidedly. The bulk of the Robins have left by the beginning of this period, and Golden-crowned Kinglets are not much observed thereafter. Yellow-bellied Woodpeckers grow scarce, and the last Orange-crowned Warbler is seen.

Periods of migration follow each other in rather rapid succession from this time on. There are often three separate 'waves' between March 20 and April 1 at the latitude of New Orleans. Characteristic of the first 'wave', occurring about March 22, is the Orchard Oriole, though the number of individuals is always small so early. The Red-eyed Vireo is a certain arrival at this time, and the Kingbird may be expected. The advance of Tree Swallows becomes general. Prothonotary Warblers are apt to be fairly common for the first time. Hooded Warblers become exceedingly plentiful. The appearance of the first Ruby-throated Hummingbirds ceases to be casual. Gnatcatchers become common. Herons and various species of Limicolæ, especially *Totanus solitarius*, arrive in large numbers. If a second wave follows this in a few days, it is not generally notable except for an increase of most of the kinds, lately arrived. The last 'wave' in March, commonly occurring from March 29 to March 31, is a very important one. Regular arrivals at this time are the Crested Flycatcher, the Indigo Bunting, the Barn Swallow, the Yellow-throated Vireo, the Kentucky Warbler, and the Wood Thrush. Occasionally some of these arrive with the preceding wave. Hummingbirds now become common. Of more uncertain occurrence are the Wood Pewee, the Green-crested Flycatcher, the Summer Tanager, the Warbling Vireo, Swainson's Warbler, and the Yellow Warbler. The last Robins are seen ordinarily at this time; Ruby-crowned Kinglets are common for the last time, and

in song for the first time; Myrtle Warblers are in song also, having begun about a week earlier. White-throated Sparrows are beginning to decrease, though Swamp Sparrows remain plentiful, and the number of Savanna Sparrows is not appreciably affected. Late transient Palm Warblers appear; sometimes they are in song.

Excepting those species whose arrival during the preceding wave is doubtful, a warm spell about April 4 brings few new species, but generally a great abundance of the common kinds arriving during the preceding period. The Yellow-billed Cuckoo is frequently an exception to this rule. Transient Thrashers and Catbirds are present. The first females and the bulk of males of the Orchard Oriole arrive. The bulk of Tree Swallows arrive. The Black-and-white Warbler, the Cerulean Warbler, the Ovenbird, and the Redstart, species not much met with in southeast Louisiana in spring, are perhaps most apt to be seen at this time. Phœbes and Ruby-crowned Kinglets depart. Myrtle Warblers decrease rapidly.

Decidedly summery weather, sometimes sharply separated from the preceding period by a fresher spell, is usual by April 10 or 12. When the Yellow-billed Cuckoo has not appeared earlier, it is practically certain to be seen by this time. The Nighthawk arrives, and in pine regions, the Chuck-will's-widow. An important arrival in the fertile alluvial regions of southeast Louisiana is the Yellow-breasted Chat.

Subsequent to this time, warm and summery weather prevails, and diurnal migrational activity is not obvious *except when the weather freshens.* From two to three of these cooler periods are likely to occur in the last half of April. Usually the most marked is that occurring on or about April 20. Notable species forming the 'waves' at this time are the Baltimore Oriole, the Scarlet Tanager, the Rose-breasted Grosbeak, the rarer thrushes, and the late transient warblers, especially of the genus *Dendroica.* (See Kopman, Auk, Jan., 1904, pp. 45–50.) The maximum abundance of Barn Swallows is reached at this time, and the first Black-throated Buntings are seen.

Sometimes in place of the diurnal appearance of migrants after April 20, and sometimes in connection with it, occur exceedingly heavy nocturnal flights on hot nights with electric storms.

As far as transients are concerned the sequence of migrational

events in southern Louisiana is of much greater uncertainty towards the end of the season than earlier. Several species, however, show great consistency in their movements at this season, and this is particularly true of departing winter visitors. The White-throated Sparrow and Myrtle Warbler nearly always depart between April 22 and April 27. The House Wren departs a week to ten days earlier as a rule. The Rusty Blackbird, Savanna Sparrow, Swamp Sparrow, and American Pipit leave in the first week of May. The departure of these species marks the practical conclusion of the spring migration. The Bobolink, the Rose-breasted Grosbeak, and late warblers and thrushes, lingering sometimes for a day or two of warm weather after a fresh spell about May 1, will depart suddenly in a body. The Redstart and Bay-breasted Warbler, however, have been seen as late as the middle of May, and the Wilson's Thrush and Catbird have been noted at New Orleans equally late.

Although the nesting period in southern Louisiana represents almost the extreme extension of the breeding season in the United States, there are only two months, from about May 15 to about July 15, when other phases of bird life are not mingled with it. By the latter date, Yellow Warblers are beginning to move into southern Louisiana, from which they are absent as nesters. With them, or closely following them, come Black-and-white Warblers, and occasionally the Cerulean Warbler. Considerable flights of *Tringa maculata*, *Totanus*, and *Bartramia* reach the coast by July 15 or 20. Though the hottest part of the summer is beginning, the nights and early mornings are frequently fresher with light northerlies. By July 25 these conditions are often pronounced, so that the number of Yellow Warblers increases rapidly, Black-and-white Warblers become fairly common, and even the first Redstarts arrive.

In connection with the brevity of the uninterrupted breeding season in Louisiana, the behavior of the Tree Swallow is interesting. While this species certainly does not breed in the southern section of the State, even assuming that it may breed elsewhere in Louisiana, it reappears near the coast by July 20 or earlier. As it may be observed at New Orleans in the spring sometimes as late as May 20, it is thus about the last species to leave, and one of the first to

return. The Barn Swallow reappears with great regularity in southern Louisiana during the first week of August, frequently on the 3d or 4th. By this time migrants have become decidedly numerous and very active. The Louisiana Water-thrush, a species that does not breed in the low coastal regions of Louisiana and Mississippi, appears fully this early. Redstarts grow common. A little later, as a rule, the Worm-eating Warbler, whose breeding range in Louisiana corresponds closely with that of the Louisiana Water-thrush, begins to arrive at the coast. Species with much more northern breeding ranges may also reach the Gulf Coast district before the middle of August. And yet the month from July 15 to August 15 is the most depressing of the heated term. After the 15th of August, day winds from the north are not uncommon, and a decidedly autumnal aspect in the weather is not infrequent during the next ten days. Kingbirds now appear in those sections of Louisiana where they are uncommon as nesters, and, in fact, become very much more abundant in all sections. Barn Swallows are even more plentiful than earlier in the month. Orchard Orioles, which are hardly common after August 1, now decrease very rapidly; Gnatcatchers are likewise rather scarce; in the pine districts the Chuck-will's-widow, and the Fork-tailed and Mississippi Kites disappear almost entirely. The last week in August is characterized by heavy rain storms and distinctly autumnal weather following. The first transient Maryland Yellow-throats now appear, while the full tide of Yellow Warbler travel is past. It is not unusual to find the first Traill's or Least Flycatchers, and transient Wood Pewees are leaving in considerable numbers. By this time or earlier, the first Bobolinks and Soras are found in the marshes of the southern part of the State, where Black Terns and continually increasing flocks of Limicolæ are assembling. Water-thrushes of both species are now very common. The transient movement of Summer Tanagers begins now, or even somewhat earlier.

While migratory movements are almost continuous from this time on, it is nearly the middle of September before any fresh arrivals are recorded in southeast Louisiana. The 15th of the month, however, is signalized by weather that is autumnal in almost every particular, and the full course of the fall migration is immediately under way. Characteristic arrivals are the Mag-

nolia, Chestnut-sided, and Blackburnian Warblers, and the Wilson's Thrush. About a week later, a much heavier 'wave' follows, bringing the first Olive-backed Thrushes, many Catbirds, Black-throated Green and Tennessee Warblers, and transient Indigo Buntings in large numbers. The Kingbird is not often seen after this period of migration. Apparently the only winter visitor to arrive with this 'wave' is the House Wren. But while the passage of transients continues unabated for several weeks yet, the coming of a considerable number of winter visitors is not delayed much longer. Savanna and Swamp Sparrows and the Phœbe arrive very early in October, if not before. White-throated Sparrows, Myrtle Warblers, Winter Wrens, and both Ruby-crowned and Golden-crowned Kinglets should be expected at New Orleans almost if not quite by October 15. The presence of these species, however, may not be obvious until the occurrence of considerably fresher weather about October 20. The American Pipit arrives within a few days later. The Red-eyed Vireo and Wood Thrush are now seen for the last time. Of transient warblers, the Black-and-white, the Bay-breasted, the Blackburnian, and the Chestnut-sided, are seldom seen later than October 15, while the Worm-eating and Yellow Warblers always depart by that date. But important waves of the Black-throated Green Warblers may occur after October 20, while the Parula, Tennessee, Magnolia, and Hooded Warblers, and the Redstart remain until November 1 or later, which is also the time of departure of the Yellow-billed Cuckoo, Nighthawk, Chimney Swift, Ruby-throated Hummingbird, and Wood Pewee.

After the last transients have left there are but few winter visitors to arrive. The Robin, however, is a species of which little is seen until about the middle of November, and Rusty Blackbirds scarcely arrive earlier than that. The Goldfinch, however, has generally come to southern Louisiana by November 15, and the Orange-crowned Warbler by November 20. With White-throated Sparrows arrived in their full numbers, and with the first decidedly cold weather commonly occurring about this date, the status of winter bird life is practically complete, though Robins, Blackbirds, and occasionally a few other species show continued increase until after Christmas.

(*To be continued.*)

UNUSUAL ABUNDANCE OF THE SNOWY OWL (*NYCTEA NYCTEA*).

BY RUTHVEN DEANE.

DURING the past winter of 1905–6, we have again been visited with an unusual abundance of Snowy Owls. I called attention to this flight in a short note published in 'The Auk' for January, 1906 (p. 100), but at that time I had been unable to obtain sufficient data on the subject. During December, January, and February I received records of some eight hundred specimens from localities scattered from Nova Scotia west to Nebraska and from Manitoba south to Missouri, showing that in this territory, at least, the flight had been quite general. As to the cause of these periodical incursions we have not much more information to enlighten us than we had during their abundance in the winters of 1901–2.[1] The weather during these visits has not been unusually severe and the temperature of the past season was one of marked mildness and considerably above the normal point in most localities. There seems to be little doubt that a scarcity of food must influence these southward movements. In some favorable localities, where in former years these owls were conspicuously represented, this past season but few, if any, have occurred. I have had to rely largely for my information upon the taxidermists who have received them for preservation, and to them I take this occasion to express my obligations, as well as to all others, for their kind assistance.

NOVA SCOTIA.

Mr. J. W. Bouteillier, Marconi Wireless Station, Sable Island, Nova Scotia, writes under date of April 6, 1906, as follows: "For the last three winters we have noticed Snowy Owls here in greater abundance than ever before. In the winter of 1902–3 there were

[1] "The Auk," Vol. XIX, July, 1902, pp. 271–283.

three or four dozen on the island, but the past winter we have had more than usual." Sable Island is about eighty-six miles off the coast of Nova Scotia, the nearest mainland.

Mr. Harry Piers of the Provincial Museum, Halifax, N. S., writes under date of Feb. 5, 1906, that there was a noticeable migration of these owls in the vicinity of Yarmouth, N. S., between the 10th and 20th of November, 1905, and that twenty-four specimens had been received by the taxidermists of that city. He also reported some twenty specimens that had been taken near Halifax. During the flight of 1901–2 but few were reported in these localities.

New Brunswick.

Mr. Turner Ingalls, Jr., keeper of Southwest Harbor Light Station, Grand Manan, N. B., informs me under date of Jan. 20, 1906, that twenty-six Snowy Owls had been seen on the island, and many of these had been shot during December, 1905. During the flight of 1901–2 Mr. Ingalls observed only about half this number.

Mr. Howard McAdams of St. Stephen, N. B., writes under date of Dec. 20, 1905, that he had received six Snowy Owls up to that time, but had heard of a number of others having been observed and killed. His specimens were received between Nov. 15 and Dec. 14, 1905.

Mr. Miles D. Emack, taxidermist, Fredrickton, N. B., writes under date of Jan. 16, 1906: "Since we have been in business we have never seen so many Snowy Owls. We have so far this season received twenty-nine, and they appear to be all over the Province. Last winter we received none, but four years ago there were plenty of them. In many cases they were reported as found in pairs. There were but few that were conspicuously white, the majority being quite gray."

Province of Quebec.

Mr. C. E. Dionne, of Laval University, Quebec, in a letter written Jan. 7, 1906, informs me that Snowy Owls have been quite abundant all the season. About fourteen specimens had been sent in,

—one from Esquimeaux Point late in September, 1905, one from Kamomraska, and several from localities from fifty to one hundred miles from the city, while others were killed in November at near by points. One specimen had been brought in badly soiled by soot. It had been killed with a stick, having descended the chimney into a room. It is presumed that while perching on the chimney top, it had involuntarily fallen into the flue. In a later letter from Mr. Dionne, dated Feb. 15, 1906, he writes that he is still receiving specimens.

Mr. Napoleon A. Comeau, Godbout, P. Q., writes under date of March 19, 1906, that the migration of Snowy Owls the past winter did not compare with the numbers which visited them in the winter of 1901–2. The first one noted was on Oct. 27, 1905, and since that date some had been in evidence most of the time. He shot one specimen on March 17. One man at Pointe de Monts, P. Q., had killed about forty since their arrival in the fall. Mr. Comeau states that within a radius of twenty miles from Godbout about one hundred and fifty of these owls had been killed, and as there was no migration of murres or dovekies this year, the want of this food supply may account for their non-appearance in as large numbers as on previous flights. Some of the stomachs examined by Mr. Comeau contained portions of the red squirrel, northern hare, mice, ptarmigan, and the Long-tailed Duck (*Harelda hyemalis*), and one had some remains of a musk-rat; there were also some seeds in the crop, but he presumed these were from some bird whose crop he had swallowed. Mr. Comeau writes that there was a moderate migration of ptarmigan the past winter.

PROVINCE OF ONTARIO.

Mr. J. H. Fleming of Toronto, Ont., informs me, under date of Jan. 2, 1906, that there had been no unusual migration of Snowy Owls in that section and he could only report records of five, all taken near the city at dates between Nov. 13, and Dec. 12, 1905. It is rather surprising that the present flight should have skipped this territory, for during the previous incursion of four years ago, considerably over one hundred were killed and observed in Toronto and vicinity.

Mr. P. A. Taverner of Detroit, Mich., writes that he saw one of these owls on Oct. 27, 1905, on Point Pelée, the most southern point of the Province, projecting into Lake Erie.

PROVINCE OF MANITOBA.

Mr. George E. Atkinson, taxidermist, Portage la Prairie, Man., writes the following interesting communication under date of Dec. 12, 1905: "Snowy Owls are very abundant all over Manitoba and the new Province of Saskatchewan this season. I have already received upwards of thirty specimens for mounting, and they are still coming in from every direction. They made their appearance about the first freeze-up, early in November and have since been generally reported. The number I have received can only be considered a small percentage of those about, as we have fortunately educated our people to protect rather than destroy these birds, and they are seldom killed save for preservation. I have had several opportunities to see these owls, while driving through the country. I have had a great many offered for sale and inquiries from many people stating that if wanted they were available. I have, however, purchased none, as I have no demand. The males seem to predominate, about 7 to 1, over the females, in number, while the number of maturer males is about 3 to 5 of immature or young plumaged birds. All the females, so far, are very dark colored. My specimens were received from Oxbow, Forget, Wolesby, Alameda in Saskatchewan, and Neepawa, Alexander, Brandon, Pipestone, Plumas, Westbourne, and generally over the Portage plains in Manitoba. I did not make any particular notes or dates of their receipt because it is to us only a periodical event, since every two or three years these birds become exceedingly abundant. As an evidence of what we could do I can only note that in one of these seasons (1886) I sought and bought all that were available and handled over one hundred birds from Portage district alone within three months, having seventy-two on hand at one time, all my own, and credited one man with securing nineteen from his own farm in two months. This proceeding has, however, been terminated and though they are equally numerous at some seasons, they are never slaughtered to any extent."

Mr. Alex. Calder, taxidermist, Winnipeg, Man., writes under date of Dec. 15, 1905: "We have been receiving a large number of Snowy Owls for the last two months. They are passing this way in large numbers, and are still coming in. Most of them have been shot within one hundred miles of Winnipeg, west and northwest." Again under date of Dec. 23, 1905, he writes: "Regarding the flight of Snowy Owls, we have had about one hundred sent in to be mounted, and have refused to purchase a number. They were never so plentiful. We are receiving letters every day from people wanting information as to the cost of mounting, or value of the owls shot."

MAINE.

Mr. Walter Hinds, taxidermist, Portland, Me., writes under date of Jan. 13, 1906, that he had received over fifty Snowy Owls this season, five having been received at one time from Richmond Island, off Cape Elizabeth, Me. (the Richmond Island record was given in 'The Auk' for Jan. 1906, p. 100), but the majority were killed along the coast between Portland and Harpswell, Me. A few were sent from Ashland, Fort Kent, and Masardis, in Aroostook Co., Me. One specimen examined contained the remains of fish.

Mr. Frank L. Colton, keeper of Petit Manan Light Station, Me., under date of Jan. 22, 1906, writes that the Snowy Owls were first seen this season about Nov. 15, 1905. During the first week seven were observed scattered over the island. After that date they were usually seen in pairs up to Dec. 17, 1905. About twenty-five were seen in all, nine of which were shot and sent to be mounted.

Mr. Wm. F. Stanley, keeper of the Great Duck Island Light Station, Me., writes me under date of Jan. 5, 1906, that there had been a number of Snowy Owls the present winter on the island. He did not, however, inform me how they compared in numbers to previous seasons when they were abundant. Mr. S. L. Crosby, taxidermist, Bangor, Me., writing under date of Jan. 5, 1906, states that the present flight seemed to be over, as he had not received any Snowy Owls for a week. About forty-five had been received, mostly from the seacoast and in the vicinity of Petit Manan, a

few having come from as far inland as the Rangely Lakes. He reports all the birds as fat and in good condition.

Capt. Herbert L. Spinney, keeper of Sequin Light Station, Me., writes under date of Dec. 11, 1905, as follows: "November 15, the wind blew very hard from the northwest and continued from that quarter for a number of days, and was quite cold. On the morning of the 18th I saw a Snowy Owl, which I shot. In the evening at twilight of the same day, I saw another, which I also secured and when returning to the house saw another poising in the air over my hen-pen. On the 20th another was taken during the forenoon by a gunner who visited the island and in the afternoon I took still another. On Dec. 3, I observed two, one of which I took. I also received a specimen taken at Georgetown, some four miles from the station. They seemed to be in pairs, those which I shot representing three males and three females. Of the four which I have skinned, two had nothing in the stomach, but were in good condition. Of the other two, one contained a small roll of hair, from a mouse I should judge, and the other contained the feathers, legs and feet of a small gull which I identified as those of *Larus philadelphia*. The head and bill were missing, though all the wing feathers and bones were among the remains."

Mr. Robt. W. Bazin, Malden, Mass., reports one specimen from York, Me. Mr. Wm. Cooper, taxidermist, Milo, Me., writes under date of Dec. 24, 1905, that two specimens, received about Nov. 30, 1905, were very fat, while one taken near Milo, Nov. 18, 1905, was very thin and swarming with parasites.

Mr. G. H. Hoxie, taxidermist, Foxcroft, Me., writing under date of Jan. 4, 1906, states that there are quite a number of Snowy Owls in his section. He had received four for mounting which were killed between Dec. 20 and 30, 1905. Mrs. W. R. Gifford of Skowhegan, Me., writing Dec. 19, 1905, reports three having been received from Skowhegan, Athens, and Cambridge, Me., between Nov. 20 and Dec. 11, 1905. Mr. C. R. Combs, of Belfast, Me., received one on Nov. 20, 1905, killed at Ilesboro, Me., and Mr. Homer R. Dill of Gardiner, Me., writes Dec. 11, 1905, that he had received five or six of these owls in the previous three weeks. The average mean temperature at Portland and Eastport, Me., for November and December, 1905, was 32.28°.

NEW HAMPSHIRE.

Dr. Charles W. Townsend, Boston, Mass., under date of Feb. 15, 1906, informs me that three Snowy Owls were killed at Hampton, Nov. 24, 1905.

VERMONT.

Mr. W. P. Conger, taxidermist, Burlington, Vt., writing under date of Jan. 23, 1906, gives me the following data regarding Snowy Owls which he has received this season, all killed in Vermont: South Hero, Nov. 20, 1905, one; North Hero, Nov. 24, 1905. one; Colchester, Nov. 28, and Dec. 22, 1905, two; Orwell, Jan. 23, 1906, one; Shelburne, Dec. 18, 1905, one; Burlington, Dec. 22, 1905, one; Albany, Dec. 27, 1905, one.

The mean temperature at Burlington, Vt., for Nov., 1905, was 36.05°.

MASSACHUSETTS.

Mr. M. Abbott Frazar, Boston, Mass., writing under date of Dec. 2, 1905, informs me that he has received for mounting about forty Snowy Owls. The birds were received between Nov. 23, 1905, and Jan. 1, 1906. While a few were sent from Grand Manan, the majority came from points along the sea coast from Newburyport to Nantucket.

Dr. Chas. W. Townsend, Boston, Mass., under date of Feb. 15, 1906, gives me the following records:

Two seen by himself in the Ipswich dunes, on Nov. 5, 1905, and Feb. 11, 1906; five shot in the Ipswich dunes, Nov. 25, 1905; one seen near Salem, Jan. 1, 1906. At different dates during November and December, 1905, and January, 1906, a gunner from Newburyport shot nineteen specimens, most of them being taken on Plum Island, off Ipswich. Three were shot at Nantucket, Mass., Dec. 1, 1906, and one at Wayland, Mass., Dec. 2, 1905.

Mr. Everett Gordon, taxidermist, Lynn, Mass., on Dec. 13, 1905, reported one from Nahant, Mass., taken Nov. 22, 1905; one from Chatham, Mass., taken Nov. 13, 1905; and one from Gloucester, Mass., taken Nov. 23, 1905.

Mr. Robt. W. Bazin, Malden, Mass., on Jan. 11, 1906, reported a specimen killed at Lakeville, Mass.

Angell and Cash, taxidermists, Providence, R. I., under date of Jan. 25, 1906, sent me the following data of specimens which had passed through their hands.

Nov. 20, 1905,	♂	Fall River, Mass.	Dec. 8, 1905,	♂	Nantucket, Mass.
" 20, "	♀	Monomoy Pt., Mass.	" 19, "	♀	Nantucket, Mass.
" 28, "	♂	New Bedford, Mass.	" 21, "	♂	New Bedford, Mass.
Dec. 1, "	♀	Nantucket, Mass.	" 23, "	♀	Monomoy Pt., Mass.

Mr. Owen Durfee, Fall River, Mass., writing under date of Feb. 21, 1906, states that one Snowy Owl was killed at Marthas Vineyard, Mass., in December, 1905, and five more in February, the last one seen being on Feb. 7, 1906.

The mean temperature at Boston, Mass., for November, 1905, was 41.06°; for December, 1905, 35.01°.

Rhode Island.

Mr. Harry S. Hathaway, Providence, R. I., on Dec. 5, 1905, reported four Snowy Owls taken at Newport, R. I., Nov. 16 and 18, 1905, and three at Warren, R. I., at about the same date. (This record was included in 'The Auk' for January, 1906.)

Angell and Cash, taxidermists, Providence, R. I., have, at my request, very kindly kept careful records of all the Snowy Owls which have passed through their hands between Nov. 18, 1905, and Jan. 1, 1906. The following were killed in Rhode Island.

Nov. 18,	♂,	Wickford.	Dec. 6,	♀,	East Greenwich.
" 18,	♂,	Narragansett Bay, near Providence.[1]	" 12,	♀,	Portsmouth.
			" 12,	♂,	Newport.
" 21,	♀,	Block Island.[2]	" 14,	♂,	Portsmouth.
" 27,	♀,	Newport.[3]	" 14,	♂,	Situate.
" 27,	♀,	Newport.	" 19,	♀,	Block Island.
" 28,	♀,	Prudence Island, Narragansett Bay.	" 19,	♀,	Point Judith.
			" 20,	♀,	Newport.
" 29,	♀,	Newport.	Dec. 21,	♀,	Seaconnet Point.
Dec. 1,	♀,	Sachnest Point.	Jan. 1, 1906,	♀,	Woonsocket.
" 1,	♂,	Seaconnet Point.			

[1] Contents of stomach, pellets of rat fur and bones.

[2] Contents of stomach, breast feathers of Black Duck and small quantity of dark colored flesh.

[3] Contents of stomach, entire rat about half grown.

Where no mention is made of the contents of stomach it was empty or not examined.

The mean temperature at Providence, R. I., for Nov., 1905, was 41.04°; Dec., 1905, 34.06°.

CONNECTICUT.

Angell and Cash, taxidermists, Providence, R. I., have given me the following data of specimens received by them from Connecticut.

Nov. 20, 1905, ♀, New London, Conn.
" 28, " ♂, " " "
" 28, " ♀, " " "
Dec. 30, " ♀, " " "

Mr. P. D. Stannard, taxidermist, Norwalk, Conn., informs me of one specimen taken at Norwalk, Conn., Dec. 15, 1905. He also writes that he has heard of a number of others having been taken.

In a letter from Mr. James J. Hill, New London, Conn., dated March 10, 1906, he refers to a Snowy Owl having been seen in New London harbor, Conn., and to another that was captured in Niantic, Conn., during the present season.

NEW YORK.

Mr. James G. Scott, keeper of the Montauk Light Station, Montauk Point, L. I., writes me under date of Jan. 11, 1906, that about ten Snowy Owls were seen in his locality and that he shot four of them between Nov. 3 and 19, 1905. He reports that they appeared about a month earlier than he has seen them in former years.

Mr. A. M. Church, taxidermist, Boonville, N. Y., writes under date of March 3, 1906, that there had been a very unusual flight of Snowy Owls during the winter. Fifteen specimens had been sent to him, and he could have secured many more if he had needed them. Those that passed through his hands were taken in a rich farming district within three miles of town. The sexes were about evenly divided. Mr. Church states that there were still a good many about the country, and that there had been an unusual abundance of field mice.

Mr. James H. Hill, New London, Conn., writes under date of March 10, 1906, as follows: "There has been another unusual influx of Snowy Owls the past season (1905), no less than nineteen having been captured on Munnatawket, or Fisher's Island, Suffolk County, N. Y., and two more were seen but eluded capture. One was also taken by the lighthouse keeper of Little Gull Island. One was taken just in time by an indignant duck hunter to save his decoy duck. Another was seen at the same time, but escaped. The first specimen was taken Nov. 20, and the last Dec. 28, 1905. Hares were as usual the *pièce de résistance* of the Fisher's Island Nycteas." In the flight of 1901–2[1] Mr. Hill sent a report of fifteen Snowy Owls which had been shot on this island and referred at that time to the abundance of hares being a great attraction for these northern visitors.

Mr. Thos. Rowland, taxidermist, New York City, writes that he received four specimens from Long Island in Dec., 1905, and had had a number offered for sale. Mr. Fred Sauter, taxidermist, New York City, informs me that he has received a few specimens which were in good condition. Dr. Wm. C. Braislin of Brooklyn, N. Y., reports a specimen from Rockaway Beach, killed about Dec. 1, 1905. Mr. Edward Neal, taxidermist, Rochester, N. Y., reports receiving three Dec. 19 and 20, 1905, all from Monroe Co., N. Y., and Mr. G. W. Altman, taxidermist, Buffalo, N. Y., received two from Niagara River, Nov. 25, 1905.

The mean temperature for New York for November, 1905, was 35.06°; for December, 1905, 29.07°.

PENNSYLVANIA.

Mr. Louis Weber, taxidermist, Philadelphia, Pa., writes me under date of Jan. 31, 1906, that he had received nine Snowy Owls taken in the city and near by points and one taken at Chester, Pa. He had also received thirteen from Winnipeg.

Mr. John Clark, Erie, Pa., reports one taken south of the city on Nov. 25, 1905.

---

[1] Auk, Vol. XLX, 1902, p. 276.

OHIO.

Mr. W. W. Woodruff, taxidermist, Cleveland, O., informs me that these owls appeared earlier this season than in previous years. He had received four specimens, two of each sex, between Nov. 20 and 25, 1905.

Mr. E. L. Mosely, Sandusky, O., writes under date of Feb. 3, 1906, giving the following records which had come to his notice: one from Marblehead, O. ; one from Port Clinton, O.; and one from Put-in Bay, O., all taken within twenty miles of Sandusky, between Nov. 21 and 27, 1905.

Prof. Lynds Jones, Oberlin, O., writing under date of Feb. 10, 1906, reports the following records. Five taken in Ashtabula Co., one in Lake Co., six in Mahoning Co., and six received by a taxidermist in Columbus, from localities south of that city, no data for these records being given. The mean temperature for Ohio for November, 1905, was 39.06°.

MICHIGAN.

Mr. Peter Lepp, taxidermist, Saginaw, Mich., writes me that he received fifteen Snowy Owls between Nov. 20 and Dec. 28, 1905. Referring to the last large migration in 1901–2, he stated that he had sixty-two specimens in his show window at one time.

Mr. Fred. Kaempfer, taxidermist, Chicago, Ill., received two specimens from Ironwood, Mich., Oct. 31, 1905.

Mr. Hugo Englehardt, taxidermist, Iron River, Mich., received five specimens, all from Iron Co., Mich., during the late fall of 1905, and Mr. W. H. Kress, of Cheboygan, Mich., received three.

Mr. Lou J. Eppinger, taxidermist, Detroit, Mich., under date of Feb. 5, 1906, writes that he had received some ten specimens from the vicinity of Detroit, two from the Upper Peninsula, Mich., and several from Iowa and the Dakotas. He stated that around Detroit this flight did not compare as to numbers with the one a few years previous.

M. P. A. Taverner of Detroit, Mich., under date of April 18, 1906, reports late records of three Snowy Owls, as follows: One

killed at River Rouge (near Detroit), Mich., March 27, 1906; one small light colored bird, killed on Saint Claire Flats, April 1, 1906; and one very large bird, also killed on Saint Claire Flats, April 5, 1906.

Mr. F. H. W. Bailey, taxidermist, Marquette, Mich., writes me that he had only received a single specimen, and that he had not heard of any others having been seen. He reports that during the flight of 1901–2 they were very abundant in his locality.

The mean temperature for Michigan for Nov., 1905, was 35.01°; for Dec., 1905, 28.04°.

WISCONSIN.

Mr. Albert Nemec, taxidermist, Cable, Wis., writes under date of Dec. 12, 1905, that he had received eight Snowy Owls from Bayfield and Washburn Counties, also a single specimen from Eau Claire. They were all sent in between Nov. 30 and Dec. 12, 1905. One killed close to the town of Cable was in very white plumage.

Mr. E. D. Ochsmer, taxidermist, Prairie du Sac, Wis., received two specimens from Sumpter, Wis., Nov. 17 and 22, 1905, and one from Prairie du Sac, Wis., Nov. 10, 1905. One specimen was nearly white in plumage, but all were very poor in flesh. Mr. J. N. Clark, taxidermist, Meridian, Wis., reports one specimen shot in that town Oct. 28, 1905.

The mean temperature for Wisconsin for November, 1905, was 34.04°; for December, 1905, 24.01°.

MINNESOTA.

Mr. T. J. Storey, taxidermist, Duluth, Minn., writing under date of Dec. 19, 1905, states that the Snowy Owls usually appear about Oct. 20, and some remain until the approach of spring. He reports them as very abundant this winter, and up to Dec. 19, 1905, he had received thirty-two for mounting. About a dozen had been killed in the city.

Mr. H. W. Howling, taxidermist, Minneapolis, Minn., under

date of Jan. 17, 1906, writes that he had received fifty-seven Snowy Owls in the past four weeks, which was more than the receipts for the past three years together. These owls were sent in from points in the western, northwestern, and southern parts of the State.

Mr. W. A. Deggeller, taxidermist, Stillwater, Minn., writes that he had received four specimens up to Jan. 9, 1906, from Watertown, St. Paul, and Withrow.

Mr. Julius Brandt, Jr., taxidermist, New Ulm, Minn., received four specimens from Martin County, near the Iowa border, previous to Dec. 23, 1905.

Mr. Albert Boehm, taxidermist, La Crosse, Wis., under date of Dec. 19, 1905, reports having received three Snowy Owls from Minnesota, — one from Lake City, early in November, one from Harmony, Nov. 24, and one from Wyoming, Dec. 10.

The mean temperature for Minnesota for Nov., 1905, was 33.01°; for December, 1905, 20.06°.

SOUTH DAKOTA.

Mr. Otto Munson, taxidermist, Custer, S. Dak., received one Snowy Owl on Dec. 16, 1905, which had been taken at Edgemont, S. Dak., and Mr. Julius Brandt, Jr., of New Ulm, Minn., received three from points in South Dakota prior to Dec. 23, 1905.

NEBRASKA.

Mr. J. W. Elwood, manager of the Northwestern School of Taxidermy, at Omaha, Nebr., writes under date of April 9, 1906, that he had received more Snowy Owls for mounting during the past winter than ever before, the flight having been exceptionally large. From twenty-six to thirty were received, principally from western Nebraska and the Dakotas, while a few were from Iowa and Minnesota.

Mr. Myron H. Swenk, Lincoln, Neb., writes under date of Jan. 10, 1906: "I have received within a few weeks a specimen of Snowy Owl from Ulysses, Butler Co., shot Dec. 8, 1905, and have records of a specimen from Crawford, Sioux Co., two from Omaha,

Douglas Co., and of others from Idaho, Iowa, and Wisconsin, showing the flight to be general over this middle western country. All these were taken in November or early December."

Mr. John A. Lord, taxidermist, Portland, Me., informs me that while in Omaha, Neb., in December, 1905, he saw about ten Snowy Owls in one taxidermist's store, which had been recently received.

IOWA.

Mr. Wm. White, taxidermist, Rolfe, Iowa, writes that he received two Snowy Owls which were killed a few miles from that city about Dec. 1, 1905.

MISSOURI.

Mr. Otto Widmann, St. Louis, Mo., writes that Frank Schwarz, taxidermist, St. Louis, Mo., had received a Snowy Owl, female, which was shot from a stable roof at Wellston, Mo. Mr. Widmann also informs me that a Mr. Johnson observed two specimens in Jasper Co., Mo., near the Kansas border on Jan. 23, 1906. One of them was shot.

The mean temperature for Missouri for November, 1905, was 30.08°; for December, 1905, 33.03°.

INDIANA.

Mr. Amos W. Butler, Indianapolis, Ind., under date of Jan. 20, 1906, sends me a list of the Snowy Owls which have been observed and killed in various parts of the State, as follows.

Lake County: 4 reported by LeGrand T. Myer, Hammond, in November, 1905.

Benton County: 1 shot in Bolivar township, November 10, 1905; 1 seen about Otterbein about November 24, 1905; 1 of two seen, was shot nine miles north of Fowler, November 4, 1905, and the other was taken afterwards.

Earl Park: On January 4, 1906, there is a report of one observed some days before at Earl Park. J. R. Opp has a specimen taken four miles

west of Otterbein, the latter part of December, 1905. Another was found in the same vicinity about three weeks before.

Fountain County: 1 was shot November 4, 1905, two miles southeast of Mellott.

Lake County: 1 was shot about December 1, 1905, near Shelby.

Miami County: 1 male was killed in Erie township, December 17, 1905. The next day a female was killed in that vicinity.

Montgomery County: 1 was shot three miles northwest of Linden, November 22, 1905; 1 was killed near Darlington on November 21, 1905.

Warren County: 1 killed on December 21, 1905.

Hancock County: 1 shot one mile northwest of Fortville.

Johnson County: 1 taken about six miles south of Franklin.

Shelby County: 1 killed about December 1, 1905, below Shelbyville, by Frank Hoffman; 1 killed by Isom Kelsey two and one-half miles west of Shelbyville December 30, 1905; 1 killed by John Tucker about December 16, 1905.

Marion County: 1 taken near Southport December 20, 1905.

Mr. Fletcher M. Noe, Indianapolis, Ind., informs me that Snowy Owls had been very generally taken at many central points in the State. He had received seven during December, 1905, and had heard of twice that number having been taken close by. Some of these records may refer to those given in detail by Mr. Butler.

The mean temperature for Indiana for November, 1905, was 41.07°; for December, 1905, 32.08°.

ILLINOIS.

Mr. Fred. Kæmpfer, taxidermist, Chicago, Ill., received twenty-two Snowy Owls which were sent in from various localities in the northern part of the State. (This record was given in part in 'The Auk,' Jan., 1906.) I examined all these specimens and the majority were dark colored females.

Mr. Rud Haman, taxidermist, Chicago, Ill., has received seven Snowy Owls from Fox Lake, Grass Lake, Barrington, and Evanston, Ill. Three were killed between Nov. 24 and Dec. 8, 1905.

Mr. Harry S. Swarth, Field Museum Natural History, Chicago, Ill., saw a Snowy Owl Feb. 2, 1906, in Jackson Park, within the City limits. The bird flew over him within gun shot. On Jan. 17, 1906, another was seen in the same locality and was not fifty feet away from the observer.

Prof. S. A. Forbes, State Laboratory of Natural History, Urbana, Ill., writing under date of Jan. 25, 1906, gives records of five specimens of Snowy Owls as follows: "Four have been brought to us this winter from this neighborhood, the furthest one from Danville, Ill., and the last from Urbana. A fifth one has been reported from Tuscola, Ill., a short distance south."

Mr. Amos W. Butler of Indianapolis, Ind., reports that one of two seen, was killed two miles north of Kansas, Ill., on Dec. 2, 1905, by Earley Dulep.

Mr. Otto Widmann, St. Louis, Mo., writes under date of Jan. 7, 1906: "Mr. Frank Schwarz, the taxidermist, informs me that he received two Snowy Owls this fall, a male and female, from Albion, Ill. (not far from Mt. Carmel), Nov. 21, 1905."

On Nov. 17, 1905, I saw a specimen at Highland Park, Ill., and watched it for an hour. (Recorded in 'The Auk' for Jan., 1906.)

The mean temperature for Illinois for November, 1905, was 42.02°; for December, 1905, 31.04°.

A BIBLIOGRAPHY AND NOMENCLATOR OF THE ORNITHOLOGICAL WORKS OF JOHN JAMES AUDUBON.

BY WITMER STONE.

NOTWITHSTANDING their preëminence in American ornithological literature and their historic interest, there has not appeared, so far as I am aware, any comprehensive review of the editions, dates of publication, and new species of the works of John James Audubon. While it is probably generally known that the elephant folio plates bear the scientific names of the birds represented upon them, and that they were published from one to four years prior to the descriptions in the 'Ornithological Biography,' it will be found that the new species are all dated from the latter in the A. O. U. Check-

List, and in all other works that I have consulted. This fact, together with the discovery of a few names on the plates which seem to have been universally overlooked, will be my excuse for the following summary, which, while it may contain nothing new, puts the matter in convenient shape for ready reference.

Audubon's ornithological works, exclusive of a few magazine articles, are four in number: (1) The Elephant Folio Plates of 'The Birds of America'; (2) The 'Ornithological Biography,' virtually the text to the above; (3) The 'Synopsis of the Birds of North America,' a systematic summary of the preceding; and (4) the octavo edition of 'Birds of America,' text and plates combined. We shall consider them in order.

I.— THE ELEPHANT FOLIO.

The publication of this great work was begun in Edinburgh in 1827, the plates being engraved by W. H. Lizars. It appeared in parts, which Dr. Coues says are "supposed to be of 5 pll. each." Of this I think there can be no doubt as each five successive plates bear a different "part" number. The first plate in each number is a large full page one representing one of the larger species. Audubon refers to this plan in his journal when he says: "The wild Turkey-cock is to be the large bird of my first number" (Audubon and his Journals, I, p. 175).

Each plate contains the common and scientific name of the bird and also of the plant figured with it. The lettering of the bird names being entirely in capitals, it is often difficult to tell whether it was the intention to capitalize the initial letter of the specific name or not; in some instances, however, it is made distinctly larger. Authorities are sometimes placed after the names and sometimes omitted, while those that are given are frequently incorrect.

Lizars proved very slow and his work, especially that of the colorists, was by no means satisfactory. Later on Audubon engaged Robert Havell of London to do the coloring, and some time between this date and September 30, transferred the whole work to his hands. It seems that Lizars engraved only two parts,

i. e., ten plates, for under date of October 27, 1827, Audubon states in his journal, "W. H. Lizars saw the plates of No. 3 and admired them much, called his workmen and observed to them that the London artists beat them completely." Parts 1 and 2, pll. I–X, then are the work of Lizars, and Parts 3–87, pll. XI–CCCCXXXV, the work of Havell. This is not the whole story, however, for it seems that in 1829, Havell retouched some of Lizars's plates and entirely re-engraved some of the others. Thus in the copy of the folio in the library of the Academy of Natural Sciences of Philadelphia plates VIII and IX are marked "Engraved by W. H. Lizars Edin^{r}."; plates I, II, VI, VII, "Engraved by W. H. Lizars Edin^{r}. Retouched by R. Havell Jun^{r}." (some have London added after Havell's name, and plates II and VII bear date 1829); plates III, IV, V, X, "Engraved, Printed, & Coloured by R. Havell Jun^{r}."

Being curious to know whether other American copies agreed with this one or whether some of them contained all of the original Lizars plates, and whether the name "*Dacnis protonotarius*" quoted for the Prothonotary Warbler might not occur in them, I corresponded with several gentlemen who owned or had access to copies, and obtained data upon six sets. Five of these were exactly like the Academy set while the one in the Museum of Comparative Zoölogy contained the original Lizars plates for which I had been searching. Correspondence with Dr. Walter Faxon brought out the fact that he had long been aware of these two editions, and through his kindness I am able to present transcripts of the inscriptions on the Lizars plates.

Plate I. "Great American Cock, Male, Vulgo (Wild Turkey) Meleagris Gallopavo." In the Havell retouched plate the first name is suppressed.

Plate II. "Black-billed Cuckoo, Coccyzus erythrophthalmus." Corrected in the retouched plate to "Yellow-billed Cuckoo, Coccyzus americanus."

Plate III. "Prothonotary Warbler, Dacnis protonotarius," changed in the Havell plate to "Sylvia protonotarius."

Plate VI. "Great American Hen & Young, Vulgo Female Wild Turkey, Meleagris gallopavo," changed to "Wild Turkey, etc."

Plate VII. "or Common Crow Blackbird" is added after Purple Grackle in the Havell plate.

Plate X. "Brown Lark. Anthus aquaticus" changed in the Havell plate to "Brown Titlark, Anthus spinoletta Bonap."

In the other plates there is no change in the bird names, though the plant names and the letters after Audubon's name differ in the two editions.

From a comparison of the engravers' names on the two sets it would appear that while the inscriptions on plates VIII and IX are somewhat altered, the plates themselves were neither re-engraved nor retouched, while the deductions drawn from the Academy's copy relative to the other plates is correct. Furthermore, it appears that R. Havell, Sr., did the coloring of the original Lizars plate VI and the printing and coloring of plates VII–X of the Lizars edition.

Audubon at the end of Volume I of the 'Ornithological Biography' gives the dates of publication for the first twenty parts and these are confirmed at several places in his journal.

No one seems to quote dates for the remaining plates, but I find that, beginning with Part 22, the plates are nearly all dated and most of the missing dates are easily supplied by comparing the dated parts which precede and follow. Part 58 (plates 286–290) was published probably early in 1836, but three of the plates bear the date 1835, while 286 and 288 are dated 1836.

The dates of publication of the plates appear, therefore, to be as follows:

1827,	Plates 1–25.	1833,	Plates 156–185.
1828,	" 26–50.	1834,	" 186–235.
1829,	" 51–75.	1835,	" 236–285.[1]
1830,	" 76–100.	1836,	" 286–350.[1]
1831,	" 101–125?	1837,	" 351–400.
1832,	" 126–155?	1838,	" 400–435.

Of the two years which are in doubt, plates 106–115 are dated 1831 and plates 131–155, 1832, while the rest are undated.

---

[1] By comparing the title pages of volume III and IIII a discrepancy will be found; since the date there given for plates 201–300 is 1834–1835 and for plates 301–435 is 1835–1838. This would imply that notwithstanding the fact that plates 286 to 300 are dated 1836 they and some of those immediately following really appeared in 1835. This is, moreover, proved by records in the library of the Philadelphia Academy stating that plates 291–300 were received October 2, 1835! This throws a doubt upon the actual year of publication of plates 301 to, say, 400. The earliest of this series probably appeared in 1835, the last possibly early in 1838, but the exact number published in 1836 and 1837 I cannot ascertain.

Dr. Chas. W. Richmond sends me the following additional data gathered from various sources, mainly by Dr. Coues.

Part	1	appeared	July, 1827.	Plate	181	appeared by	Feb. 1, 1834.
"	4	"	Nov., 1827.	"	200	"	" June 14, 1834.
"	5	"	Dec., 1827.	"	301	"	" April, 1836.
"	12	"	by March, 1829.	"	390	"	" Nov. 1, 1837.
"	17	"	July, 1830.				

He also sends a copy of an advertisement in 'The Atheneum' for January 6, 1838, containing the following: "The number of perfect copies at present [Nov. 1, 1837] subscribed for does not exceed 190, of which upward of 80 are subscribed for in America, and the expense of getting them up is so great that not more than ten or fifteen copies above the number subscribed for will be prepared."

The plates were bound in four volumes, which are dated as follows on the title-pages: I (plates 1–100), 1827–1830; II (plates 101–200), 1831–1834; III (plates 201–300), 1834–1835; IIII (plates 301–435), 1835–1838 June 20. It will be noted, however, that these dates do not always correspond with the dates on the plates.

There is another edition of the Folio plates, "reissued by J. W. Audubon" and dated on the title page 1860,[1] published by Roe, Lockwood & Son, New York. This is very inferior to the original, the plates being reproduced by chromolithography by J. Bien, 180 Broadway, N. Y. There are apparently only 140 plates in this edition; those that are numbered correspond to the plate numbers in the octavo, but there are additional numbers which may indicate that this edition was published in parts; for instance, the Crossbill, "plate 200," is also marked No. 11–4. Some of these plates are dated 1859 and some 1860. The nomenclature seems to be the same as in the Havell folio.

On the 435 plates of the original edition there are represented 489 supposed distinct species of birds.[2] Twenty species are each represented on two plates, and there are thirty-five composite plates where from two to six species are represented together.

[1] Coues erroneously quotes 1861, but at second hand.

[2] The name of the Golden-eyed Duck appears differently on the two plates where it is figured, but it was not intended to recognize two species.

These are almost all at the end of Volume IIII, and the crowding was necessitated by the unwillingness of the subscribers to have the work extend beyond the stipulated 80 numbers (400 plates). Even as it was, thirty-five additional plates were required, and a number of subscribers refused to take them.[1]

Forty-seven new specific names occur on the plates, and should date from them and not from the 'Ornithological Biography.' Some of these seem to have been entirely overlooked, as "*Fringilla maculata*" for the Blackheaded Grosbeak, and "*Strix californica*" for the California Burrowing Owl. Others seldom cited are "*Falco labradora*," based on a Labrador Gyrfalcon, and "*Cinclus townsendi*" on a young Water Ouzel. A remarkable generic name on the plate of the Surf-bird is "*Frinca townsendi.*" Those who believe in adopting every spelling as a different generic term are welcome to replace *Aphriza* with this *lapsus calami*, but for my part it goes as a misspelling of *Tringa*! None of these names are mentioned in any of Audubon's subsequent works. A complete list of the new species is given below.

II. The Ornithological Biography.

This work, in five volumes, is the text to the folio plates and the species are treated in exactly the same order. It was published in Edinburgh.

Vol. I, dated 1831 (March in the preface), covers plates 1 to 100.

Vol. II, dated 1834, covers plates 101–200. The preface is dated December 1 but it is quite likely that it did not appear until after January 1, 1835.

Vol. III, dated 1835 (December 1, in preface), covers plates 201–300, and certainly did not appear until the following year, as many of the plates here treated are dated 1836.

Vol. IV, dated 1838 (November 1, in preface), covers plates 301–387 (was reviewed in February, 1839).

Vol. V, dated 1839 (May 1, in preface—had appeared by July 27), covers the remaining plates, with the addition of a great amount of supplementary matter concerning various species, and the description of a number of new ones.

---

[1] See Introduction to Vol. IV, Orn. Biography, pp. xxi–xxii.

While Audubon was engaged in preparing the manuscript of the first volume of the 'Biography' his wife "copied it all to send to America, to secure the copyright there." [1] It was published under the direction of Dr. Harlan in Philadelphia, and bears the same date as the Edinburgh edition. A copy presented to the Philadelphia Academy by Audubon is dated on the fly-leaf October, 1831. So far as nomenclature is concerned the two editions are identical. There are said to be copies from the Edinburgh types with a Philadelphia imprint dated 1832 [2] but these I have not seen. Of the remaining volumes there seems to be but the one edition.

Comparing the number of species recognized in the Folio with those in the 'Biography,' we find that the Rough-winged Swallow and Mourning Warbler are added in the body of the latter work and sixteen others, mostly western species, in the supplementary portion. Ten other species, seen but not characterized, are given in a separate list at the end of Volume V, and in Volume IV a loon, probably the large yellow-billed species known as *Gavia adamsi*, is provisionally named *Colymbus Richardsoni*.

As against these additions, five of the species of the Folio are suppressed in the body of the text, and eleven recognized in the early volumes of the latter are reduced to synonymy in the supplement to Volume V.[3] We thus have 502 species recognized at this period of which eleven, as stated above, were more or less hypothe-

---

[1] Extract from journal in 'Life of Audubon,' edited by his widow, p. 206.

[2] *Cf.* Loomis, Auk, 1891, p. 230, where, however, the date of the real Philadelphia edition is misquoted 1832.

[3] These are as follows:

Falco hyemalis, pl. 71	= lineatus, O. B. V, p. 380.
" labradora, 196	= islandicus, O. B. II, 552.
" temerarius, 92	= columbarius, O. B. V, 368.
Strix californica, 432	= cunicularia, O. B. V, 264.
Muscicapa selbii, 9	= mitrata, O. B. V, 465.
Sylvia vigorsii, 30	= pinus, O. B. V, 457.
" rara, 49	= cœrulea, O. B. V, 456.
" childrenii, 35	= æstiva, O. B. V, 453.
" palmarum, 163	= petechia, O. B. II, 259.
" sphagnosa, 148	= canadensis, O. B. V, 458.
" autumnalis, 88	= parus, O. B. V, 457.
" roscoe, 24	= trichas, O. B. V, 308.
Cinclus mortoni, 435	= americanus, O. B. V, 303.
" townsendi, 435	= americanus, O. B. V, 303.
Turdus ludovicianus, 19	= aquaticus, O. B. V, 284.
Anthus pipiens, 80	= spilonetta, O. B. V, 449.

tical. The twenty-six new names that date from the 'Biography' are listed below.

III.— THE SYNOPSIS.

This single volume comprises the description, synonymy, and habitat of each species, all arranged in systematic order, with the nomenclature revised and brought up to date. The number of species recognized is the same as in the 'Biography,' with the exception of the eleven "hypothetical species" which are here omitted. Two species are added, *i. e.*, Stanley's Goldfinch and American Ptarmigan, but two others, the European Golden Plover and Common Ptarmigan, are suppressed, so that the total remains the same, 491. Five new specific names date from the 'Synopsis,' and a number of new genera.

The 'Synopsis' is probably in a large measure the work of Macgillivray who was engaged by Audubon to prepare the scientific descriptions, etc., for the 'Biography.'

IV.— THE OCTAVO EDITION OF 'BIRDS OF AMERICA.'

This work, in seven volumes, follows exactly the order and nomenclature of the 'Synopsis,' the text being that of the 'Biography' with little change except in the order of the species and the omission of the episodes. It was published in one hundred parts, each five plates, Philadelphia, 1840–1844.

There are no new names, and no additional species until the end of Volume VII, where seventeen birds not before treated are figured and described. These were mostly procured on the Missouri River Journey.

The plates of the Octavo edition were reduced from the Elephant Folio with the aid of the camera lucida by John W. Audubon. The composite plates are broken up so that only one species appears on each plate of the Octavo, and where the same species was figured on two of the original plates the figures have been combined and part of them left out, or one of the plates has been omitted.

Besides the seventeen additional plates in the last part, seven

of the species described in the 'Biography' and 'Synopsis' are here figured for the first time, *i. e.*, Rough-winged Swallow, Mourning Warbler, Delafield's Warbler, Parkman's Wren, Stanley's Goldfinch, Morton's Finch, and American Ptarmigan.

The total number of plates in the Octavo is 500; four of the largest birds, however, are illustrated by two plates each, reducing the figured species to 496, to which are to be added 12 unfigured species, the descriptions of which are reprinted from the 'Biography,' making the final total of species recognized by Audubon 508.

Of these 474 are recognized to-day in the A. O. U. Check-List, 17 have proved to be identical with others, 10 are extralimital, 2 are hybrids, and 5 have never been found since. Of the species suppressed by Audubon 2 have been resurrected.

Of the 508, and the two since reëstablished, Audubon was personally acquainted with 385, while 74 were sent him by John K. Townsend from the Pacific coast and 51 he obtained from museums and other sources.

There are several reprints of the Octavo 'Birds of America' quoted in Coues's 'Bibliography' which are interesting only from a bibliographic standpoint, for, so far as I can ascertain, there is no additional matter and no new names contained in them.

COMPLETE LIST OF NEW SPECIES PROPOSED BY AUDUBON.

Folio Plates, Birds of America.

Muscicapa Bonapartii, Pl. 5, 1827. St. Francisville, La., Aug. 13, 1821.

Muscicapa Selbii, Pl. 9, 1827. St. Francisville, La., July 1, 1821.

Falco Washingtonii, Pl. 11, 1827. Near Henderson, Ky.

Troglodytes bewickii, Pl. 18, 1827. St. Francisville, La., Oct. 19, 1821.

Turdus ludovicianus, Pl. 19, 1827. Louisiana.

Sylvia Roscoe, Pl. 24, 1827. Cypress Swamp, near the river, in Mississippi, Sep., 1821.

Sylvia Vigorsii, Pl. 30, 1828. Perkiomen Creek, Pa., May.

Sylvia Childrenii, Pl. 35, 1828. Jackson, La., May, 1821.

Falco Stanleii, Pl. 36, 1828.

Muscicapa Traillii, Pl. 45, 1828. Prairie lands, Arkansas River.

Regulus cuvierii, Pl. 55, 1829. Fatland Ford, Schuylkill River, Pa., June 8, 1812.

Sylvia carbonata, Pl. 60, 1829. Henderson, Ky., May, 1811.

Sylvia rathbonia, Pl. 65, 1829. Louisiana or Mississippi.

Emberiza henslowii, Pl. 70, 1829. Opposite Cincinnati in Kentucky. 1820.

Falco temerarius, Pl. 75, 1829. Fatland Ford, Pa., April, 1812.

Anthus pipiens, Pl. 80, 1830. Prairies of our N. W. States [Illinois?].

Falco Harlani, Pl. 86, 1830. St. Francisville, La.

Corvus americanus, Pl. 156, 1833.

Fringilla Bachmani, Pl. 165, 1833. Charleston, S. C.

Troglodytes americana, Pl. 179, 1833. Dennisville, Me., 1832.

Sylvia Bachmanii, Pl. 185, 1833. Charleston, S. C.

Fringilla Lincolnii, Pl. 193, 1834. [Labrador.]

Falco Labradora, Pl. 196, 1834. Labrador.

Sylvia swainsonii, Pl. 198, 1834. Charleston, S. C.

Rallus elegans, Pl. 203, 1834.

Carbo Floridanus, Pl. 252, 1835. Florida Keyes.

Ardea occidentalis, Pl. 281, 1835. Florida Keyes.

Pelicanus americanus, Pl. 311, 1836. Probably Kentucky.

Corvus nuttallii, Pl. 361, f. 1, 1836 (7). Santa Barbara, Cal.[1]

Fringilla maculata, Pl. 373, ff. 2, 3, 4, 1837. Columbia River.

Buteo harrisi, Pl. 392, 1837. Between Bayou Sara and Natchez.

Diomedea fusca, Pl. 407, 1838. Mouth of the Columbia River.

Sterna havelli, Pl. 409, f. 1, 1838. Opposite New Orleans, 1820.

Sterna trudeaui, Pl. 409, f. 2, 1838. Great Egg Harbor, N. J.

Phalacrocorax resplendens, Pl. 412 [f. 1], 1838. Cape Disappointment, Columbia River.

Phalacrocorax townsendi, Pl. 412 [f. 2], 1838. Cape Disappointment, Columbia River, Oct., 1836.

Picus martini, Pl. 417, ff. 1, 2, 1838. Toronto, Canada.

Picus phillipsi, Pl. 417, ff. 5, 6, 1838. Massachusetts.

Picus harrisi, Pl. 417, ff. 8, 9, 1838. Columbia River.

Ptilogony's [*sic*] Townsendi, Pl. 419, f. 2, 1838. Columbia River.

Plectrophanes townsendi, Pl. 424, f. 7, 1838. Columbia River.

Hœmatopus bachmanii, Pl. 427, f. 1, 1838. Mouth of the Columbia.

Hœmatopus townsendi, Pl. 427, f. 2, 1838. Mouth of the Columbia.

Frinca townsendi, Pl. 428, 1838. Cape Disappointment, Columbia River.

Uria townsendi, Pl. 430, 1838. Mouth of the Columbia.

Strix californica, Pl. 432, f. 2, 1838. [California.]

Ornithological Biography.

Regulus Carbunculus "Bon.," I, p. 288, 1831. Fatland Ford, Pa.

Emberiza Townsendii, II, p. 183, 1834. "Vicinity of Philadelphia," really New Garden, Chester Co., Pa.

---

[1] This and possibly the next are the only new names the dates of which seem to be in doubt.

Cinclus townsendi, Pl. 435, f. 1, 1838. Columbia River.
Cinclus mortoni, Pl. 435, f. 2, 1838. [Columbia River.]
Fringilla Macgillivraii, II, p. 285, 1834. Charleston, S. C.
Parus carolinensis, II, p. 341, 1834.
Colymbus Richardsonii, IV, p. 53, 1838.
Anas Breweri, IV, p. 302, 1838.
Hirundo serripennis, IV, p. 593, 1838. Charleston, S. C.
Sylvia Macgillivrayi, V, p. 75, 1839. Columbia River.
Turdus Nanus, V, p. 201, 1839. Columbia River.
Sylvia Delafieldi, V, p. 307, 1839. California.
Troglodytes Parkmanii, V, p. 310, 1839. Columbia River.
Fringilla Mortoni, V, p. 312, 1839. "Upper California" [really Chili].
Picus Gairdnerii, V, p. 317, 1839. Probably Columbia River.
Larus occidentalis, V, p. 320, 1839. Cape Disappointment, Columbia River, Oct. 7, 1836.
Diomedea nigripes, V, p. 327, 1839. Lat. 30° 44′, long. 146°, Pacific Ocean, Dec. 25, 1834.
Procellaria pacifica, V, p. 331 [printed 321], 1839. Pacific Ocean.
Procellaria tenuirostris, V, p. 333, 1839. Within a day's sail from the mouth of the Columbia.
Falco Bachmanii, V, p. 334, 1839. South Carolina.
Strix forficata, V, p. 334, 1839. "Green Bay, on my way across to the Mississippi."
Tantalus fuscus, V, p. 334, 1839. "On the bayou between Silver Springs and St. Johns River, Fla."
Phasianus Americanus, V, p. 335, 1839. "Thornbury's Pass, near Mallade River, Rocky Mts.
Caprimulgus Nuttallii, V, p. 335, 1839.[1] Rocky Mountains.
Picus pyrrhonotus, V, p. 335, 1839. Near Ft. Van Couver.
Fringilla chlorura, V, p. 336, 1839. "July 14, 1834, Townsend."
Turdus Townsendi, V, p. 336, 1839. "Shoshone River, west of the Rocky Mts."
Phalacrocorax leucurus, V, p. 336, 1839. Off mouth of Columbia River.
Phalacrocorax leuconotus, V, p. 336, 1839. Off mouth of Columbia River.

Synopsis.

Strix americana, p. 25, 1839. Southern States, Texas to N. C.
Carduelis Yarrellii, p. 117, 1839. Upper California.
Carduelis stanleyi, p. 118, 1839. Upper California.
Lagopus americanus, p. 207, 1839. Melville Island, Churchill River.
Microptera americana, p. 250, 1839. Throughout the Country.

[1] This is properly characterized in Vol. VII, Octavo Birds of America, 1844, p. 350 It is here a nomen nudum.

Octavo Edition of Birds of America.

Fringilla Harrisii, VII, p. 331, 1844. Near Black Snake Hills, May 4, 1843.

Vireo Bellii, VII, p. 333, 1844. Near Black Snake Hills, May 4, 1843.

Alauda Spragueii, VII, p. 334, 1844. Near Ft. Union, June 19, 1843.

Plectrophanes Smithii, VII, p. 336, 1844. Edwardsville, Ill.

Emberiza LeConteii, VII, p. 338, 1844. May 24, 1843.

Sturnella neglecta, VII, p. 339, 1844. Above Ft. Croghan.

Quiscalus Breweri, VII, p. 345, 1844. Near Ft. Union.

Emberiza Shattuckii, VII, p. 347, 1844. Upper Missouri.

Picus Ayresii, VII, p. 348, 1844. Near Ft. Union.

[Caprimulgus Nuttallii, VII, p. 350, 1844.] Below Ft. Union, Sep. 7, 1843.

Columba Trudeauii, VII, p. 352, 1844. Texas.

Emberiza Bairdii, VII, p. 359, 1844. Near Ft. Union, July 26, 1843.

CONCORDANCE OF NOMENCLATURE IN FOLIO PLATES AND ORNITHOLOGICAL BIOGRAPHY.

Plates.	*Orn. Biog.*
3. Sylvia protonotaria	Sylvia protonotarius.
36. Falco Stanleii	Falco Stanleyii.
103. Sylvia pardalina	Muscicapa canadensis.
106. Cathartes atratus	Cathartes Jota.
118. Muscicapa gilva	Vireo gilvus.
122. Fringilla corulea	Fringilla cœrulea.
124. Muscicapa pusilla	Muscicapa Wilsonii.
135. Sylvia Blackburnia	Sylvia Blackburniæ.
151. Cathartes atratus	Cathartes aura.
160. Parus atricapillus	Parus carolinensis.
163. Sylvia palmarum	Sylvia petechia.
170. Tyrannus griseus	Muscicapa dominicensis.
173. Hirundo americana	Hirundo rustica.
174. Muscicapa inornata	Muscicapa Cooperi.
183. Regulus cristatus	Regulus tricolor.
192. Lanius Septentrionalis	Lanius excubitor.
196. Falco Labradora	Falco islandicus.
212. Larus canus	Larus zonorhynchus.
223. Hæmatopus ostralegus	Hæmatopus palliatus.
227. Anas acuta	Anus acuta.
228. Anas carolinensis	Anas Crecca.
248. Podiceps carolinensis	Prodiceps carolinensis.
252. Carbo Floridanus	Phalacrocorax floridanus.
253. Lestris Pomarina	Lestris pomarinus.

255. Phalaropus Platyrhynchus	Phalaropus fulicarius.
266. Lestris parasitica	Lestris parasiticus.
279. Sterna Boyssii	Sterna cantiaca.
311. Pelicanus americanus	Pelecanus americanus.
323. Rhincops nigra	Rhynchops nigra.
335. Scolopax grisea	Scolopax noveboracensis.
338. Anas glocitans	Anas Breweri.
360. Sylvia troglodytes	Troglodytes hyemalis.
360. Troglodytes obselata	Troglodytes obsoletus
362. Corvus columbianus	Nucifraga columbiana.
365. Fringilla laponica	Fringilla lapponica.
372. Buteo vulgaris	Falco Buteo.
373. Fringilla maculata	Fringilla melanocephala.
384. Fringilla americana	Emberiza americana.
385. Hirundo thalassinus	Hirundo thalassina.
386. Ardea alba	Ardea egretta.
392. Buteo harrisi	Falco harrisii.
393. Sialia arctica	Sylvia arctica.
393. Sialia occidentalis	Sylvia occidentalis.
394. Plectrophanes ornata	Emberiza ornata.
394. Pipilo arctica	Fringilla arctica.
399. Sylvia philadelphia	Sylvia macgillivrayi.
400. Fringilla spaltria	Fringilla psaltria.
400. Linota borealis	Fringilla borealis.
402. Mergulus antiquus	Uria antiqua.
402. Phaleris superciliata	Phaleris cristatella.
402. Ceratorrhina occidentalis	Ceratorhyncha occidentalis.
403. Clangula vulgaris	Fuligula clangula.
417. Picus martini	Picus martinæ.
417. Picus hirsitus	Picus hirsutus.
417. Picus phillipsi	Picus phillipsii.
417. Picus harrisi	Picus harrisii.
418. Turdus minor	Turdus nanus.
419. Ptilogony's Townsendi	Ptilogonys Townsendi.
421. Pelicanus fuscus	Pelecanus fuscus.
422. Buteo lagopus	Falco lagopus.
424. Pyrrhula frontalis	Fringilla frontalis.
424. Linaria tephrocotis	Fringilla tephrocotis.
424. Plectrophanes townsendi	Fringilla townsendi.
427. Hœmatopus bachmani	Hæmatopus bachmani.
427. Hœmatopus townsendi	Hæmatopus townsendi.
428. Frinca townsendi	Aphriza townsendi.
429. Fuligula stelleri	Fuligula dispar.
432. Strix californica	Strix cunicularia.
432. Strix noctua	Strix passerina.
433. Icterus bullocki	Icterus bullockii.
433. Carduelis mexicanus	Fringilla mexicana.

434. Tyrannula pusilla	Muscicapa pusilla.
434. Vireo bartrami	Vireo bartramii.
434. Muscicapa phœbe	Muscicapa Richardsonii.
434. Tyrannula nigricans	Muscicapa nigricans.
435. Cinclus townsendi	Cinclus americanus.
435. Cinclus mortoni	Cinclus americanus.

All other species bear the same name in both works.

ERRORS OF REFERENCE.

In Volume V, plate reference to *Fuligula stelleri* should be CCCCXXIX instead of CCCCXXX, and to *Uria townsendi* CCCCXXX. This error has been copied in every subsequent work I have consulted.

In the same volume plate reference to *Perdix neoxenus* should be CCCCXXIII, fig. 1, not fig. 3; and to *Perdix plumifera* same plate, figs. 2 and 3, not 1 and 2.

The following occur in the supplementary part of Volume V:

Falco harlani, LXXXIV for LXXXVI
Phalacrocorax dilophus, CCLVIII for CCLVII
Charadrius vociferus, CCXV for CCXXV

In the 'Synopsis' there are the following errors in the plate references:

Hirundo purpurea	XXIII	should be	XXII
Emberiza graminea	XC	"	XCIV
Muscicapa dominicensis	CLXXII	"	CLXX
Sylvicola pinus	CXI	"	CXL
" petechia	CLXIV	"	CXLV
Turdus wilsoni	CLXVI	"	CLXIV
Icterus baltimore	CCCCXXIII	"	CCCCXXXIII
Quiscalus ferrugineus	CXLVII	"	CLVII
Picus pileatus	XIII	"	CXI
" carolinus	CCCCXV	"	CCCCXVI
Mergus cucullatus	CCXXXIII	"	CCXXXII
Thalassodroma pelagica	CCXI	"	CCCXL
Colymbus arcticus	CCII	"	CCCXLVI
Phalacrocorax floridanus	CCLI	"	CCLII

In the Octavo edition the names on plates 187 and 188, representing the Brown Finch and Townsend's Finch, are transposed though the plate references in the text are correct.

ERRORS OF QUOTATION.

This seems to be the proper place to call attention to the following corrections, which are written in pencil on the margins of the copy of Volume V of the 'Ornithological Biography' in the Library of the Academy of Natural Sciences of Philadelphia, in the hand of John K. Townsend and signed J. K. T. They refer to notes furnished by him to Audubon and misplaced by the latter.

Volume V, p. 22, paragraph on habits of *Fringilla cinerea* "belongs to *Fringilla grammaca*, V, p. 17."

Page 204, Audubon says that Townsend procured a thrush which "he considered as new," etc. Townsend says, "mistake, the specimen was marked *Turdus wilsoni*."

Page 236, under *Fringilla townsendi*, the quotation from Townsend relative to its habits "belongs to *Emberiza pallida*, p. 66."

Page 464, the quotations under *Sylvia mitrata*, Townsend says, are "a mistake. The bird alluded to both by Mr. Nuttall and myself is Sylvia Wilsoni." The real mistake is in the heading the English portion of which is correct, *i. e.*, Green Black-capped Warbler; under this Audubon gives *Sylvia mitrata* instead of *S. wilsoni*. A similar confusion is found on p. 623 where 'Eared Grebe 'and 'Podiceps cornutus' are associated.

Page 512, under *Fringilla iliaca* the statement that it occurs on the Columbia river is a mistake, according to Townsend.

Those interested in the charges of plagiarism raised by Audubon against Wilson,[1] after the latter's death, should read Ord's refutation and counter charge (Proc. Amer. Philosoph. Society, Vol. I, p. 272) where it is stated that Audubon copied Wilson's figure of the Mississippi Kite to complete his plate 117. It must be admitted that a tracing of Wilson's bird fits exactly over Audubon's figure, but the copyist left out one of the bird's toes! The charge against Wilson resolves itself solely into a question of veracity between Audubon and Ord; there is no resemblance whatever between the two figures of the Small-headed Flycatcher, while Audubon's statements about Wilson's acceptance of his offer to let him copy some of his drawings are contradictory (*cf.* Ornith. Biog., I, p. 439 and V, p. 291).

[1] Ornith Biog., V. p. 291.

NOTES ON SOME NORTHERN BIRDS.

BY REV. C. W. G. EIFRIG.

KNOWING that bird notes from the eastern coast of Hudson Bay are very scarce, I asked Mr. A. P. Low, who has made many trips to that and adjacent Territories in the employ of private corporations or the Dominion Geological Survey, for his bird notes entered in his diaries and journals during the several trips. Unfortunately these had either been mislaid, lost, or given over to the companies to whom the collections had been turned over, with the exception of the few which, through the kindness of Mr. Low, I am here able to present. I add some of my own notes, which may prove of some interest. Mr. Low's notes are in the form as given to me, with the addition of a few explanatory words.

Notes on Birds taken at Great Whale River, East Coast of Hudson Bay, Lat. 55° 30′, Winter 1898–99.

"Nov. 4, 1898. Harold killed two Sharp-tailed Grouse and saw three others. Mr. Gillies says that the birds are rare, but have been taken as far north as Little Whale River."—This is, of course, *Pediœcetes phasianellus.* Macoun, 'Catalogue of Canadian Birds': "Mr. A. P. Low puts its northern limit in Labrador at Lat. 57°."—This would seem to extend the range of this species further east than given by most authors.

"1899. The following birds winter about Great Whale River: Labrador Jay (*Perisoreus canadensis nigricapillus*), Raven (*Corvus corax principalis*), Redpoll (*Acanthis linaria?*), Chickadee (*Parus atricapillus*, probably *hudsonicus*), American Crossbill (*Loxia curvirostrata minor*), Shrike (*Lanius borealis*), Canada Grouse (*Dendragopus canadensis*), Sharp-tailed Grouse (*Pediœcetes phasianellus*), Willow Ptarmigan (*Lagopus lagopus*), Rock Ptarmigan (*Lagopus rupestris*)."—This seems quite a list for this latitude.

"April 17. First Snowflake (*Plectrophenax nivalis*).

"March 26. Kittiwake killed at the mouth of the river; no open water; must have come in from beyond the Belcher Islands. Brünnich's Murre and the Dovekie were found frozen along the ice during the winter.

"May 1. Rough-legged Hawk (*Archibuteo lagopus sancti-johannis*).

"May 2. Large flocks of Snowflakes, Lapland Longspurs (*Calcarius lapponicus*), Shore Larks (*Otocoris alpestris*), two eagles (*Aquila chrysaëtos*), two hawks, and two Robins (*Merula migratoria*).

"May 11. First nest of Redpoll eggs.

"May 13. Long-tailed Duck (*Harelda hyemalis*).

"May 19. Sea Coot (*Oidemia perspicillata*).

"May 20. Red-throated Loon (*Gavia lumme*).

"May 24. Loons and Snow Geese.

"June 2–3. Many White and Blue Snow Geese passing north (*Chen hyperborea* or *C. h. nivalis* and *C. cærulescens*).

"June 12. Eggs of Herring Gull (*Larus argentatus*) and Eider (*Somateria dresseri*).

"May 11–24. Thirty-three nests of Redpoll.

"May 20. Nest of Goshawk (*Accipiter atricapillus*) in top of large tamarack, containing three eggs. Nest nearly two feet in diameter, made of small branches of larch, lined with small green spruce boughs and ptarmigan feathers.

"May 24. Nest of Robin.

"May 29. Nest and eggs of White-crowned Sparrow (*Zonotrichia leucophrys*)."

Notes on Birds of Ottawa, Ontario, and Vicinity.

HOLBŒLL'S GREBE (*Colymbus holbœlli*).— Oct. 16 a local gunner took a male on the Ottawa River of this rather rare species. What interested me was its stomach contents, which consisted of a bunch of feathers. As it is not known to feed on anything having feathers, it is somewhat surprizing. I looked up the matter in books at my command, but found little in explanation. Warren in his 'Birds of Pennsylvania' states that he found feathers in the stomachs of two of these grebes. In the ancient 'Knight's Pictorial

Museum of Animated Nature,' I found it stated that this grebe plucks out some of its own feathers either purposely to "aid in digestion" or inadvertently while preening. I cleaned the feathers therefore, and on close inspection and comparison it is seen that they undoubtedly are some of its own feathers. But why these birds should swallow so many of their feathers while preening, whereas none are found in the gizzards of other birds that preen just as much, would, I think, be hard to say. Or do they really eat them purposely to 'aid digestion'?

GLAUCOUS GULL (*Larus glaucus*). On December 2, 1905, the watchman at the Dominion rifle range here, which is on the south bank of the Ottawa River, took a specimen of this gull in one of the several immature plumages. This is the first record for this vicinity.

HYBRID BLACK DUCK (*Anas obscura rubripes?*).— The status of the Black Duck here is quite interesting. According to local ornithologists of long standing and of ability, the facts do not agree with Brewster's position as stated in Vol. XIX of 'The Auk.' We may revert to this sometime in the future. What is to be recorded here is an apparently new and curious hybrid. On last Nov. 20, I saw in the Ottawa market a number of Black Ducks that were strikingly dissimilar to the common form. The head was larger, the neck thicker and shorter, the color blacker, especially also about the head and neck, and the bill and tarsus shorter and stouter. The dealer said they had been shot on the St. Lawrence River, near Montreal. Two ornithological friends of mine, who besides being highly competent ornithologists, are also sportsmen of long experience, say that this form is a hybrid between Black Ducks used on the St. Lawrence as decoys and some domestic ducks. Are similar hybrids noticed elsewhere? — The more common hybrid form, Black Duck + Mallard also occurs here.

CANADA GOOSE (*Branta canadensis*).— There is a flock of semi-domesticated Canada Geese kept here in the residential part of Ottawa by a Mr. Latour. I know there are such semi-domesticated flocks elsewhere, *e. g.*, on Chincoteague Island, Virginia, but I would like to record this flock because it throws some light on the age question. Mr. Latour has one pair since

nineteen years, and they were three years old when he got them from another person; one is nineteen years old, another seventeen. The one he valued most, had died a short time previously, at the ripe old age of 33 years. He feeds them finely cut up hay, much oatmeal, and some sand and lime.

SOLITARY SANDPIPER (*Helodromas solitarius*).— What seems to be the first clear breeding record of this species for Ottawa and its immediate vicinity was made by Mr. Edward White, who last July saw the tiny and downy young of this species two or three days from the egg, together with their agitated parents. This was about ten miles from Ottawa, on the Ontario side of the river.

GREAT GRAY OWL (*Scotiaptex nebulosa*). A specimen of this rather rare casual visitant was shot last Nov. 20, by Mr. W. Kelley, a farmer of South March, fourteen miles west of Ottawa.

SCREECH OWL (*Megascops asio*).— This species has now been definitely established as breeding here. Last July and August Mr. George White found at various times 4–5 Screech Owls in a rarely used outbuilding, to which they had found an entrance, but could not find the exit. Two were starved to death when found, the others were yet alive and were released.

ARCTIC THREE-TOED WOODPECKER (*Picoides arcticus*).— June 14, 1905, while walking through a partially cleared spruce swamp at Inlet, Quebec, fifty miles northeast of Ottawa, I was attracted by a queer sound emanating from a bush. The sound was as if produced by pulling out the end of a clock spring and suddenly releasing it, producing a wiry, humming sound. The author of it proved to be a male of this woodpecker. In the course of the half hour that I watched him he showed himself master of quite a repertoire of notes and would-be songs. When flying he would say: *chut chut* and then rattle like a Kingfisher. When hammering on a tree and preening himself, he would intersperse those actions by a chuckling: *duck duck duck*. At last a Robin chased him away.—The quaint call of the Olive-sided Flycatcher (*Nuttallornis borealis*): *put take care*, one adding: *putt low*, could be heard at the same time.

CANADA JAY (*Perisoreus canadensis*).—While this bird was abundant here during the winter 1904–5, it is entirely absent this winter. Last Sept. 28, I saw a pair at Inlet, Quebec, where they

seem to breed— the Ottawa River may be put down as the southern boundary of their breeding range in this section. One of that pair looked strange, even comical, because he was entirely without tail. Nor was it because it was moulting, for it was fully feathered otherwise as was also its mate. Neither did the absence of its caudal appendage dampen its spirit of bravado, for it sailed into a wasp nest with a great deal of vim, not minding the wasps in the least. Wasps seem to be a staple article of food with them, when to be had, as Mr. Kingston, a local ornithologist, tells me that he has found wasps in their stomachs repeatedly.

RUSTY BLACKBIRD (*Euphagus carolinus*).— The southern boundary of the breeding range of this species seems to approximately coincide with that of the preceding species, at least in this region. July 12 I saw at a small lake in the Laurentian Hills, near Inlet, Quebec, a family of this species. I took one of the young to make sure. They had not come there on their migration, for they always stayed together, there were no migrants about, and in every way acted as if at home.

CHIPPING SPARROW (*Spizella socialis*).— Last Oct. 12, a large sparrow wave passed through the country near Eganville, Renfrew Co., Ont. There were Tree Sparrows, Juncos, White-crowned and White-throated Sparrows, and the present species. Among these last were a great number having one or several pink excrescences on feet or wings, which seemed to be of a somewhat horny texture. One, on the wing of a specimen I took, was as large as a pea. I never before noticed such growths to be so common as on that day.

FIELD SPARROW (*Spizella pusilla*).— In the large flight of migrants noted under the preceding species, were also quite a number of Field Sparrows. This is certainly a very northerly record for them, the place where they were observed being about eighty miles northwest from Ottawa. A few days previously Mr. E. White had seen one or several near this city. Despite two seasons' diligent searching for them here in summer, I have never been able to find one. How then can they turn up in migration, apparently in the company of birds having come from further north, seems hard to explain.

TOWHEE (*Pipilo erythrophthalmus*).— This handsome bird,

an old acquaintance of mine from Maryland, seems to be extending its breeding range to this latitude. While I never saw it here, I was surprised to see a mounted specimen, a male, in the small collection of the keeper at the rifle range, just without the city limits. Upon inquiry he stated to me, that he had seen three or four of these birds near the range during the summer of 1904, of which he shot and mounted the one in question. In the summer of 1906 he saw about ten of them frequenting the same place. It is to be hoped that they return in greater numbers and stay.

UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.[1]

II.

BAIRD TO AUDUBON.

Carlisle, June 20th, 1840.

Dear Sir

I was not less surprised than delighted at receiving your kind answer to my letter, for I felt like one who has done an act for which he does not know whether he is to be praised or blamed. I am very glad to hear that you purpose publishing a work on the Quadrupeds of our country, which no one is more capable of doing than yourself. Dr. Godman's work though very good as far as it goes yet is inferior in respect to minute and accurate distinction of species, as well as in being complete. May I take the liberty of asking the plan of your work, the size, expense &c. If you could

[1] Since the publication of the first series of these letters (Auk, Vol. XXIII, No. 2, April, 1906) I have received a number of additional ones. For the privilege of making copies and publishing them I am under many obligations to Miss M. E. Audubon.

give me some general idea of the manner in which I am to assist you & of what particular Genera & Species you wish information or specimens, I will do every thing in my power; for although of course more difficult to find than birds, yet I hope that by increased exertion to make up the difference. What do you think of the Zoological report [1] presented to the N. York Assembly last winter by Dr. DeKay? He created a great confusion in my brain respecting classification, which had already become quite muddled by reading the work of Mr. Swainson on "Birds" in Lardner's Cab. Cyclop. Can you tell me what bird his "*Corvus Cacolotl*" [2] is? I have seen some numbers of your work now publishing, and admire them very much. I have no doubt that it will do more to spread a love for Natural history, than any work ever published. For my part I read the description of birds and the episodes in your "*Ornithological Biography*" with the same motive of pleasure as I used to read a favorite novel.

We have a bird in our collection which differs essentially from the other species of its genus. It is a thrush and I send you quasi description below. I will send you this bird as well as the others spoken of by Philadelphia. I may have an opportunity of sending it there in a week or ten days. You will find them in the hands of Mr. J. Dickinson Sergeant, Chestnut St. two doors above the Mint.
Thrush. Turdus.
Bill stout, tail broad and even. Secondary quills and tail feathers mucronate, the former very much so: Third quill longest, exceeding the Second by $\frac{1\frac{1}{2}}{12}$ Whole upper parts dusky olive, head only a shade darker, a dark spot before the eye; a line from base of upper mandible over the eye, and eyelids yellowish. Throat, neck and breast tinged with pale yellowish brown; and marked with decided and rather large brown spots. Sides dark yellowish brown, rest of lower parts white, quills and tail brown the edges

[1] Assembly Document No. 50. Jan. 24, 1840. "Communication from the Governor, transmitting several reports relative to the Geological Survey of the State."
Includes Letter from J. E. DeKay, of the Zoölogical Department, dated May 7, 1839, with "Catalogue of the Animals belonging to the State of New York, as far as they have been figured and described, January 1, 1839" (pp. 7–14) and "Report of J. E. DeKay, of the Zoological Department" (pp. 15–36).

[2] *Corvus cacolotl* Wagler (Isis, 1831, 527), is a synonym of *Corvus sinuatus* Wagler, (Isis, 1829,748), the Mexican Raven (*Corvus corax sinuatus*) of the A. O. U. Check-List.

tinged with dark yellowish brown. Length to end of tail 7 inches. Wing from flexure $3\frac{9}{12}$. Tail $2\frac{3}{4}$. Bill along ridge $\frac{5}{12}$. Edge of lower mandible $\frac{7}{12}$. Tarsus 1. Middle toe and claw $\frac{10}{12}$. Hind do $\frac{6}{12}$. The only bird with which it can be compared is the Hermit Thrush, but from which it differs very materially. The bill is considerably stouter. It has no brownish red at all about it & its wings and tail are much darker; and though the spots on the breast are not so numerous, yet there is more of the pale yellowish brown on this, than on the neck & breast of the Hermit Thrush.

Believe me sir

Your Obt. Servant

Spencer F. Baird.

John J. Audubon. F. R. S. &c.
[Superscription] John J. Audubon. F. R. S.
86 White St.
New York.

BAIRD TO AUDUBON.

Carlisle, January 30th, 1841

Dear Sir

I sit down to write, as I dare say you yourself have, before now, surrounded by "Birds, Beasts &c. I have been pulling them from every corner of the house for the purpose of showing them to some friends who called to see them. They now amount to such a number that I find myself unable to keep them together in one room. I was very agreeably surprised this afternoon, on comparing the skin of a *Fuligula Marila*[1] shot in the Potomac, with that of a supposed one obtained near Carlisle, to find that the latter was the *Fuligula Rufitorques*.[2] Not having compared the *Rufitorques* with the description in the "Biography" and not attending to the difference in the Specula and bills, I had labelled it "*Fuligula Marila*" Young Male. I omitted to state that the little flycatcher I sent you in the summer had been obtained by Dr. Leib of Phila. but

[1] *Aythya marila nearctica.*
[2] *Aythya collaris.*

sometime after I had obtained my specimen. I hope that you will let me know all about those specimens I sent, Flycatcher, Thrush, Warbler, & Shrew. Is the specific Character of *Sciurus Capistratus*,[1] Viz. ears and nose white, as given in Bachman's monograph, essential. I got a specimen a few weeks ago, Length to end of tail vertebrae 24 inches. Tail vertebrae, 11 inches. Weight 2 lbs. 5 oz. Female. Above grizzled yellowish Gray & Black, beneath feruginous, as also are the ears & feet & tail beneath. Tail annulate with black. Nose brown. Bones light reddish. I do not know what to refer it to except to *S. Capistratus*.

When I was in Philadelphia in the summer I saw some flycatchers which Townsend and others called Traill's Flycatcher, being the same as those we have as "*Muscicapa Pusilla*." My Idea is certainly that they are the latter, having compared them very carefully with the descriptions, when fresh. I will send you one to see, in order that you may decide. Are you acquainted with any work on Comparative Anatomy of Birds & Quadrupeds. I have been using the article on Birds in Rees's Cyclopedia,[2] but not being able to make head or tail out of the description of the muscles &c, I threw it aside & wrote one myself. I however want to know such of the names, of muscles, as I cannot find from Bell, or McCartney. In what way do you keep Quadrupeds mounted? or merely in the skins: & also what length of time does it occupy you to skin & sew up a duck, or warbler? You see I am very inquisitive. Don't you think that you will come our way soon. I hope that we may see you before long. I have a great deal of advice to ask, & articles to show, also doubts to settle. I will send you those birds you wished by the first opportunity and believe me to be most sincerely

Your Obedient Servant

Spencer F. Baird.

[Superscription] John J. Audubon Esq.
No. 86 White St.
New York.

---

[1] *Sciurus niger*.

[2] Published in 45 vols., 1802–20.

BAIRD TO AUDUBON.

Carlisle, Feb. 8th, 1842.

My dear Mr. Audubon.

After a trial of two weeks I begin to find that I am getting over the shock caused by the sudden transition from the bustle of Broadway to the lifelessnes of Carlisle, and hope that by the application of the proper means I may in time perfectly recover. Philadelphia seemed dull but Carlisle was death itself. My visit now however seems but as a dream, and I have settled down into my old regular monotonous life as if I never had been absent a day. When I arrived my friends had a great many questions to ask of course, but almost the first ones on every lip were about Mr. Audubon,—how he looked? What was his age, whether the idea they had formed of him from his writings was correct, many queries also were respecting Mrs. A. and her sons; and all said that they would ever be grateful to them for their kindness, to one away from home. When I arrived in Philadelphia some unexpected intelligence caused me to come almost immediately on, instead of spending a week as anticipated. I however saw almost all of my acquaintances, having by dint of hard exercise managed to traverse almost the whole of the City without however having procured anything in the "Quadrupedologius" line. I had not been long in Carlisle before shouldering my gun I marched out to the creek and succeeded in compassing the death of a poor Golden eye, who unaware of its dangerous proximity to a second "Long Tom" [1] came flying calmly up stream, when "bang" went the gun, "splash" went the duck and "plunge" went my favorite black Newfoundland. Between the three I had the duck in my hand in five or ten minutes but as whisslers are never very good and not at all eatable now, I gave it to a companion who seemed to think he would like to try the

[1] Audubon's favorite gun, which had very long barrels. He always called it "Long Tom" and carried it on many of his expeditions. It is still in possession of the family, but the barrels were cut off to more modern proportions by those who used it after his death. It was not unusual for sportsmen of earlier days to give nicknames to their guns. I have shot with an old duck hunter whose old fashioned arm was familiarly known all over the country as "Old Betsie." There was a flint lock pistol, called "Long Tom," such as were used by the highwaymen in England in the early part of the 18th century. (R. D.).

experiment for himself. The weather has been very warm for the last ten days and I am in expectation every day of seeing the robins, blue birds, & other early spring visitors. I was out in the country last Friday, and almost every step I took "off" a turtle tumbled from a log, or a frog jumped into the water, while I was almost eaten up by the gnats. The blue wing teal passed me but not withstanding all my efforts, obstinately refused to give my dog a chance of showing his skill in bringing birds out of water. However I know where they stay & will try & kill them before long.

For want of other objects I have commenced to draw the sternal and shoulder apparatus of our birds, a pretty large collection of which I have been making for a year past. As soon as I can do them pretty well I will send you on a specimen. I find that in many cases I can distinguish species of the same genus from each other, and always genera. I have no doubt that some doubtful or difficult species may be identified by the differences in the shape of the Sternum, & Clavicle. Have you heard from Mr. Lyon of Bedford yet about the money he owes you? I was asking about him the other day, of an acquaintance of his, who told me that he was as good as gold in all his debts, & expressed some surprise at his not having paid, as he generaly is very punctual. Last week I walked up to Pinegrove an iron works about sixteen miles in the mountains where resides the Mr. Ege [1] I have so often spoken about as the mighty Nimrod of our county. On my arrival I found a fine wild cat hanging in the stable which had been killed a few days before. On returning the next day I took the cat with me slung across my shoulders, and on reaching home after measuring & weighing it skinned it. I am in hopes of getting some more from there, as they promised to catch all they could for me. It was considered a pretty large one though some considerably larger had been killed. It is twice the size of the one I killed myself a year ago. Shall I send them on now or wait for some more to add to them. The ears were very much tufted, the tufts being an inch long. I gathered much respecting the habits of this animal which I will send you hereafter. The skin is as large as those you showed me in the box under your drawingtable, but it is somewhat stretched.

[1] Peter Ege, at that time proprietor of the Iron Works at Pinegrove, Pa., and a local hunter of renown.

I do not believe that those were larger than this of mine, and a cat of 36 inches may be considered very large. The dimensions were as follows: To root of tail 27½ inchs. To end of tail verteb. 33. Fore to hind foot, both extended 50 inchs. Height of ear externaly 3 inchs. Laterally 2½ Tufts 1. Circumference of body 13¼. The animal was exceedingly thin yet weighed 16½ lbs. Had it been fat it would have drawn 20 or more. It was also a male.

Have you received anything new lately, from Smith or any body else. Please let me know the dimensions & weight of your wild cat, and what you have figured since I left New York. The measurements of the cats taken by me are much fuller than I have given here I merely wished to give you some idea of its size. Please give my respects to Mrs. A., your children & such of my acquaintances as you may chance to see, and believe me.

Your affectionate Pupil
Spencer F. Baird.

P.S. I forgot to say that I had a fine steak of the wild cat broiled and it tasted like a tender piece of fresh pork. I will certainly eat the whole of the next one obtained. I intend to taste all the Quadrupeds inhabiting this part of the country.

S. F. B.

[Superscription] John James Audubon Esq.
No. 86 White St.
New York
N. Y.

AUDUBON TO BAIRD.

New York, Feby. 10, 1842.

My dear young Friend.

It is about half an hour since I had the real pleasure of receiving your letter of the 8th inst. and my earnest thanks to you for it and its contents; to all of which I will try to answer at your request.

That Beautiful Carlisle, its surrounding hills bordering its valleys, all within the bosom of quiet nature should appear to you as a small affair when compared to our largest city in the Union, is not at all remarkable, but let me ask you the following questions. Did you

meet all your dear Parents and Friends quite well? Did they not receive you with the kindest of welcomes? Were not their *hearts* and feelings towards you the same as ever? Surely all this was fact, and being so, would you not after all prefer *Little Carlisle* [1] than *Great New York* with all its humbug, rascality, and immorality? Surely or do I mistake your nature sadly, you do! It is now a good long time since I was young, and resided near Norristown in Pennsylvania. It was then and is now a very indifferent place as compared with New York; but still my heart and mind oftentime dwell in the pleasure that I felt there, and it always reminds me that within a few miles of that village, my Mother did live, and it was there also that my good fortune led me to know and to marry the excellent Wife I have yet, at whose hands yourself have tried to be rendered comfortable. Say what you will, "there is nothing like home." But to change the subject, I trust that in good faith you have not spoken of us to your good family in higher terms than we deserve. We have liked you because we have seen that you deserved to be liked, and I hope with the truest sincerity that we will be enabled always to like you equally. Few men were more disappointed at not hearing sooner from you than your Friend, Docr. Goldsmith,[2] and good Major LeConte,[3] all of us, in fact, have wondered oftentimes what could have become of you, but now that I know of your being safely ensconced at "Dear Sweet Home," I will let the news fly townward. I wish I could be with you, if only for one week, for I then imagine that between your friends of the mountains, yourself, and myself, we could Tree a "Catamount" and soon untree him. The tugging part of that far-famed animal, I would cheerfully give up to your youthful shoulders, but not so with the figuring of it, yet for a while. Is there such a Beast in existence? Do let me know as soon as you can. I am heartily glad that you have procured a wild cat from the mountainous part of Pennsylvania, and that you have preserved its skin, which I beg of you to forward as soon as you please, along with whatever other quadrupeds you may have in hand, that we may say more on those Beasts of the Central

[1] In 1842 the population of Carlisle was about 4400.

[2] Dr. Middleton Goldsmith, born 1818, died Nov. 26, 1887.

[3] John Eatton LeConte, born 1784, died 1860. A naturalist who in early life served in the corps of army topographical engineers with the rank of major. He was father of John L. LeConte of Philadelphia, the distinguished entomologist.

States, than has ever been before told. Do send me all you know of the habits, habitats, etc. of said Wild Cats, and any other animals. The tufts of the ears of your specimen must surely prove to be an exception to the Rule, as mine, which is a very fine one, had these ornaments only half the length of those of the one you have procured. The measurments of mine are as follows: from nose to end of scull following the facial curvatures of the head, six inches, Ditto, to end of ear, 8 inches. Ditto to root of tail 30 inches. tail (vertebrae) 5 inches. Ditto to end of hairs 5½ inches. Fore foot stretching leg and nose, 7 inches, hind foot do., leg and tip of tail 7½ inches. Hind feet webbed within ⅝ inch of the claws; Tufts on the ear ½ inch long, breadth of ear 1⅝ inch, anterior heighth of ear 1¾; length of neck, 4 inches. Weight 17 lbs. avoirdupois. VERY FAT. From root to root of ears taken laterally 3 inches; from tip to tip of ears, laterally, 7¼ inches, breadth of head at anterior part of ears, 4 in. "The spot" on the posterior part of the ears is not "a spot," but represents a (undecipherable) portion of almost ⅛ of a globe. You cannot draw any one subject without improving. All I have to recommend to you is to work slowly, and *constantly*, that is, whenever you can! Since you left us, I have drawn, or, perhaps, finished, the wild cat, the Canada Lynx, two *Arvicola Hispidus*,[1] two *Sorex Parvus*[2] (a very rare species hitherto unknown in the state of New York) one short eared cat squirrel, (it may prove a different species from the one with tufted ears) and a white hare, *Lepus Americanus*. I have now in hand, alive, one fine *Mustella Erminea*,[3] two *Arvicola pennsylvanica*[4] and two *Hispidae*. Mr. Smith writes to me from Houston (Texas) that he has two fine Peccaries, two Lynx, two Cat Squirrels, two Bats etc. etc. etc. etc. But I will let you know when I see these things. I have heard from Quebec from a Mr. Martin[5] who is a great collector there, that he has "Black Hares,"

---

[1] *Sigmodon hispidus* Say & Ord.

[2] *Blarina parva* (Say).

[3] *Putorius cicognanii* Bonap.

[4] *Microtus pennslyvanicus* (Ord).

[5] John Martin, Jr., a chronometor and watchmaker, also a naturalist, who lived in the lower town of Quebec. Sir James M. LeMoine writes me that when Audubon visited Quebec in 1842, Martin invited the naturalist to stop under his roof during his stay in the city, and when he took his departure presented him with a copy of his 'Birds of America.'

Marmots, Squirrels, Bats, and a hundred other things, which he will send me in the spring.

Look out for Martens, and try to find me some yourself! I am glad that you find wild cat meat pretty good, as it corroborates the sayings of many others, who pronounce it equal to young veal.

Let me say to you ("en passant") that your handwriting is considerably improved, and depend upon it that your attention *to Drawing* will soon enable you as of "copperplate." Go ahead!

I now wish you earnestly to offer our joint respects, regards, and best wishes to all your family and friends, and to believe me always,

Yours, most truly,

John J. Audubon.

86 White Street.

P. S.

Thank you for what you say of the Bedford gentleman. When I write next, I will mention him at greater length. I wish you could let me know whether we could procure first rate peach trees from your vicinity, and how much 50 of them would cost. I should like to have them assorted, soft, and clings yellow, or red, or blood-red. We wish to plant these as early in March as possible, if young trees, two years old could be had, we might, perhaps, have fruit on some of them during the next summer? Try what you can do for your New York friend.

[On the outside of the letter is the following:] I will make up a box for you in a few days, and send it to you through Mr. Chevalier.

BAIRD TO AUDUBON.

Carlisle, March 4th, 1842.

My dear Mr. Audubon

"The winter is over and gone, and the voice of the Turtle is heard in the land" So king Solomon said some thousand years ago and so says your humble servant now. Spring has opened in earnest, the Robins, Blue Birds, Blackbirds, are all here in great numbers. Wild Geese were heard "Honking" for the first time this afternoon, and the Golden crested Kinglet has begun to come into the gardens. Mallards, Green winged Teal, Baldpates, abound in our streams and in short every thing proclaims the arrival of the most welcome season of the year. In illustration of

all this I send you a paper, containing an article bearing on the subject written by a young cousin of mine, W. M. Penrose, one whose greatest ambition is to write as well as Mr. Audubon. I have delayed answering your letter, in order to make inquiries about the Peach trees. I am sorry to find that our Nursery men have none now good for anything, having sent almost their whole stock to Philadelphia last season to supply the demand in the Jerseys. They console me however by saying that they will have plenty next year.

Before I proceed further let me tell you of two ideas I have in my head, being expeditions in search of Quadrupeds and Birds. One is to the eastern shore of Maryland. I have some relations there who want me to come to see them very much. As my mother is about to visit Washington shortly, passing of course through Baltimore I have some notion of letting her take my baggage to the latter place and set out for it on foot. It is seventy-five or eighty miles from here, and I can walk there in two or three days, and by taking the steamboat, I shall be landed within a few miles of my destination, which is Read's Creek a branch of Chester river. Squirrels are very abundant, particularly the stump eared cat, and if I go I shall be able to procure plenty. My going however is uncertain, depending on several contingencies. The second "Idea" is of a trip to Maine in July with a friend of mine in college who lives there and who insists on my accompanying him home. He lives in New Gloucester and is forty or fifty miles only from the White Mountains of New Hampshire, where he has a sister living within a few miles of the celebrated "Notch." He gives the most glowing description of the abundance of birds and beasts around him, and promises me that I shall have the assistance of every person within thirty miles circuit. Another inducement in his eyes at least, is that I shall be Bridesmaid or something of that sort to a sister of his, who is to be married then, and that in virtue of my office, I shall kiss all the girls in the room, all insured to be pretty too. But I know that you will give me credit for saying that I would rather get a new rare Quadruped or Bird than kiss all the pretty girls in creation. Miss—— not excepted. I should like to go very much, but I do not know if I shall be able. The recent pecuniary difficulties in Pennsylvania have affected our family as well as thousands of others whose wealth consists in stocks of different kinds.

No one knows what is to come but if my mother can spare me fifty dollars, which will be about the expense of the trip, I shall go, and return in a few months heavily laden with the spoils of science.

During a visit made some time ago to Pinegrove, an iron establishment of Mr. Ege's I obtained some interesting information of habits of our Wild Cat. Mr. Ege has been a hunter from his earliest youth to the present advanced age of between sixty and seventy, and now though not as active as he was once wont to be, yet he will have to be a pretty hard rider who will take the brush from him. Of his daring feats of horsemanship many feats are remembered and related by the companions of his adventures. Seven miles from Carlisle in the gap of the South Mountain is a heap of loose stones about two hundred feet from top to bottom, formed by the debris of the rocks above. Once after having pursued a deer for a whole day the animal ran to the foot of this place, and dashing up the hill was immediately followed by Mr. Ege. The deer having reached the top decended half way, ran along the hill for forty or fifty yards, and reascended to the sumit, still pursued however by the gallant equestrian. The stones which were mostly loose rattled down from beneath the horses feet, a single slip would have been almost certain death yet he rode over the place as easy and unconcerned as if he had been on a smooth turnpike.

The wild cat is becoming more numerous every year; few are caught by the hounds, and still fewer are caught in traps or shot, so that in time they will become almost the only animal of the chase, except foxes, the deer having become very scarce from several causes. One of these is the severe winter of 1839 when the snow having a depth of fifteen or twenty inches with a hard crust, the deer as soon as driven into anything faster than a walk, broke through and were held as in a trap; thus allowing men with snow shoes on, to walk up and kill them with clubs. One monster murdered twenty in a day! The wild cats also aid in the work of destruction, killing great numbers every year, by dropping on them from a tree, or spring from the ground, when in the act of drinking or feeding. One which I killed a year ago had its stomach filled with deers hair. A man some years ago had been out hunting deer, and towards noon stopped near a piece of rich Bottom, in order to eat his dinner. Presently he heard a great crackling in the thicket not far from him and looking towards the place saw a

deer coming to him behaving in a very singular manner. To seize his rifle and kill the deer was but the work of a moment, when walking up to the animal he was surprised to see an immense wild cat clinging to its neck with his teeth buried in the flesh. The cat on seeing the man let go his hold and walked round the deer loth apparently to leave it, and, remained long enough to allow the hunter to load his rifle and stretch him dead also. They are hunted on horse back with a large pack of hounds at Pinegrove. They will tree after running a few miles when it is generally easy enough to get them. Although many stories are related of their ferocity, they are a cowardly animal. Some one of the hunters climbs the tree and with a stick forces the animal to leap from the limb on which it may be recumbent, when its career is soon ended by the hounds, which stand open mouthed under the tree. They have been known to jump from a height of forty and fifty feet uninjured. When they do not tree they make for their holes in the rocks, which should they reach, they are safe. The one obtained this winter was caught within ten feet of its hole. It had its claws nearly worn to stumps from having lived among the stones. Some years ago a large cat was killed and thrown into the crotch of a pretty tall tree. Some weeks after, another cat was trailed to, and killed from the same tree, on looking at the first cat, it was found nearly eaten up, evidently by the second individual, as none but an animal of that species could have reached it. The following are the Measurements of those obtained a year ago and last winter. No. 1 is the male one shot Nov. 30. 1840. No. 2 brought from Pinegrove Jan. 1842. Measurements in inches.

No. 1 was *very* fat, a coat of it every part of the skin. weight 12½ lbs. No. 2 was *very* thin exceeding by weight 16½. So much for the measurements. If you wish the descriptions, from the fresh

	1.	2.		1.	2.
To end of tail (verteb.)	29¾	33	From end of fore leg to end of		
Tail (verteb.)	5¼	5½	hind leg both extended.	42	58
Extent of fore leg.	29¾	33	extent of ears across crown, tips		
Extent of hind leg.	28¼	33½	of hair not included.	8½	8½
Heighth of ear anteriorally	2½	3	Circumference of the chest part		
Heighth of ear inside (laterally)	12½	13½	of body (middle).	17	13½
Circumference behind fore leg.	14	13½	From one fore foot to the other		
Head from nose to occiput.	5¾	6¼	across the shoulders.	30½	38½
Elbow joint to claws of fore leg.	9	10½	Circumference of neck close to		
From Heel to claws of hind leg.	6¼	6½	head.	8	8½
Tibia.		9	Circumference of head before		
Carpus to claws.		4½	ears.	10	
Longest whisker.		4	Circumference of wrist.	3¾	
Weight.	12½	16½			

specimens, please let me know. I will send the animals on in a few days & will advise Mr. Chevalier thereof by letter. So much for "Wild Cats."

I had quite an adventure the other day. A countryman came in and told me that he had nearly fallen into a deep hole on the top of a hill on his farm, and asked me to come out and see it. I did so and having procured lanterns, we went to the place. We descended the hole in a nearly perpendicular, but zig-zag direction for about twenty-five feet, when we found ourselves at the bottom, on a ridge separating two large and deep chambers of the cave. These we explored and on the bottom of one of them, found the nearly perfect skeleton of what had been an immense bear. The skeleton was in pretty good preservation, but must have been there a long while. The scull was deficient in all the incisors, one upper canine and several molars. A few carpal, metacarpal, tarsal, and metatarsal, with all the phalanges but one, were wanting. Also one or two of the vertebra and the whole tail. On putting it together I find that the vertebral column consisting of 26 vertebra, together with the head and pelvis attached measures 4½ feet. It must have been at *least* five feet long and three feet high, perhaps more, as no account is taken of the tail. Will probably go down again, to find if possible the missing parts. I am much obliged to you for what you say about sending me a box of bird skins. If you have an old skin of the fox squirrel in feruginous pelage, which you do not want please send it. I will get some skins of our cat squirrel soon as they come out of their winter quarters, so as to be shot. Tell the Major that I caught a small beetle some weeks ago and have him duly stuck in the box. I have not seen any since but hope to do so when I shall catch them with all zeal. Tell him I shall not let him give up his promised visit next summer. Any items from time to time respecting animals figured, obtained or heard of will be thankfully received, as the newspaper folks say. Please give my best respects to your kind family, Dr. Goldsmith, the Major, and any others you see of my acquaintance, and Believe me.

Yours very affectionately

Spencer F. Baird

[Superscription] John James Audubon Esq.
86 White St.
New York.

BAIRD TO AUDUBON.

Carlisle, May 3d, 1842.

My dear Mr. Audubon

I have been in some doubt as to where this letter should be addressed, since "86 White St."[1] will not reach you, and you must by this time be snugly fixed I hope in your beautiful place up the River. Do not laugh therefore if I prefix "Formerly" to the old superscription. We have had nothing new or interesting in any department here lately, nothing having been plenty yet except ducks. Of these last I have killed a great many; as many as eight, ten, or twelve in a day, which you know are pretty large numbers for such a locality. I have not been out yet without killing at least two or three. Mallards, Black ducks, Baldpates, Summer ducks, Sprig tail, Golden eyes, Gooseanders and Black heads were the most abundant. The other species which occured are Shovelers a few, Ring neck two or three flocks, South southerly one, Buffel heads a number, Hooded Mergansers, eight or ten pair, Green wing teal forty or fifty, and Blue wing Do. one flock of more than forty, and several stragglers. No Ruddy ducks have yet made their appearance as last spring. Of these which I have shot, I prepared the heads of forty or fifty for myself & Dr. Morton,[2] and stuffed but two or three. I have drawn the Sternums with the accompanying apparatus, viz. Scapula & Clavicle, of a good many birds, especially the water birds. It is my intention to prepare three of all our birds. I have drawn the sculls of several of our birds, five or six ducks, Loon etc. Also some Quadrupeds as Florida *Neotoma*, Chickaree squirrel, common Rabbit, Mink and Muskrat. I think them to be the best studies in drawing I could have.

Quadrupeds are very scarce now, from what cause I know not, I have not seen more than two or three bats, and very few glirine animals. I have been able to procure only a few *Arvicola* as yet,

[1] Where Audubon and his family resided, after returning from his last visit to England, in the autumn of 1839, until his removal to "Minniesland" in the spring of 1842.

[2] Dr. Samuel George Morton, a once prominent physician and President of the Philadelphia Academy of Sciences, born Jan. 26, 1799, died May 15, 1851.

but I hope to get more soon. I have made arrangements with several men & boys in various parts of the country, fifteen twenty or thirty miles off in several directions, to secure a number of squirrels, weasels, and anything else. I have heard a good deal of a fox entirely black, on our mountains, and have been promised one before the summer is over. I do not know whether I shall be able to go to Maine & New Hampshire in the summer, if I can afford it I shall go, if not I must stay at home and get what I can here. I suppose that the First Number of the "Quadrupeds of North America" is out by this time, I hope that it will be hailed by a large list of Subscribers, and will do what I can for this desirable end. Please let me know in what order the animals will appear, and what ones are in the No; also any other news in the zoological line.

Vegetation is wonderly advanced with us, and if no frost or other casualty interferes, the abundance of fruit and everything else will be unparalleled. All the fruit trees are loaded, and the young peaches, cherries, & even apples and pears are well formed. Wheat and rye are in the finest condition, the lettuce is in full head. By the by while I think of it, what do *you* think of several swan having been killed, so far [in] the interior of this state as Chamberburg.[1] There is less water there than here, and a flock of fourteen kept about the town for several days. A good many Wild Geese have also been killed all over our county, in the various streams about. I must stop now or my letter will be too late for the mail. Give my best respects to your kind family and any of our mutual acquaintances, and Believe me

Your Affectionate Pupil

Spencer F. Baird.

P. S. You ask me if I have heard from Dr. Bachman.[2] I have not, but nothing would give me greater pleasure than receiving a letter from him, excepting one from yourself.

[Superscription] John J. Audubon Esq.
formerly, "86 White St."
New York.
N. Y.

---

[1] Capital of Franklin County, 157 miles west of Philadelphia.

[2] Rev. John Bachman, D. D., born in Rhinebeck, N. Y., Feb. 4, 1790, died in Charleston, S. C., Feb. 24, 1874.

BAIRD TO AUDUBON.

Washington August 4th. 1842.

My dear Mr. Audubon

I received your letter yesterday and I take this opportunity to return you my thanks for the very flattering letter of recommendation enclosed in it. I have put it in the hands of my uncle who will use it in some way to my advantage. I called on Mr. Cushing [1] at the Capitol yesterday morning and asked him about the Presidents letter. He seemed much surprised to hear that you had not received it yet, said that it had been written a week ago, and assured me that he would attend to it without delay. The weather has been delightfully cool and pleasant here since last Sunday, the only drawback being the great quantity of dust. Have you ever seen the Red variety of the Northern Gray Squirrel. My brother tells me that during a residence of a year at a school in Cecil Co. Maryland he frequently saw & shot a so called "Fox squirrel," entirely different from the one of that name in Carlisle Pa. a specimen of which you have. The Gray Cat squirrel is quite common here, and the difference between it and this last was very obvious. It consisted in invariably smaller size, habits, and a different Physiognomy. The color varied from a slight tint to a deep fox red. The school he was at lay about six miles from Port Deposit on the Susquehanna. Please tell Major or John LeConte to write to me if you see them and Believe me

Yours Sincerely

Spencer F. Baird

---

[1] Caleb Cushing, statesman, born Jan. 17, 1800; died Jan. 2, 1879.

GENERAL NOTES.

The Masked Duck in Maryland. — It may be of interest to readers of 'The Auk' to know that a specimen of the St. Domingo or Masked Duck (*Nomonyx dominicus*) was taken near here on September 8, 1905. So far as I am aware this is the fourth specimen to be recorded as having been taken within the limits of the United States.

The bird in question, an adult male, was taken by a student of Delaware College, Mr. J. C. Smith of Elkton, Md. Mr. Smith, accompained by Mr. John Mackall, was out rail-shooting about four miles from Elkton, Md., early in the morning of September 8, when the bird was secured. Mr. Smith reports that it was not wary and that it was secured at the third shot, the other two causing it to fly but 150–200 yards each time. The bird was brought to me for determination and after satisfying myself as to its identity I preserved its skin. This has recently been deposited in the U. S. National Museum, at Washington, D. C.— C. O. Houghton, *Entomologist and Asst. Professor of Zoölogy, Delaware College Experiment Station, Newark, Del.*

Southeastern Michigan Records.— Wilson's Phalarope, *Steganopus tricolor*. A specimen of this species was seen by the writer May 5, on a little mudhole in Ecorse Township, Wayne County, this State. It was in company with a flock of Yellow-legs, and though I watched it for some time I was unable to collect it. However, on May 12, the same or a like bird was observed again and this time I secured it. It proved to be a female in full plumage and is now No. 502 in my collection.

White-rumped Sandpiper, *Actodromas fuscicollis*.— The rarity of the records of this species here seems to make it worth while to record the taking of three out of six seen by the writer on the same ground as mentioned in the preceding note, June 2.— P. A. Taverner, *Detroit, Mich.*

Hudsonian Godwit (*Limosa hæmastica*) **in Ontario.**— May 13, 1905, I took a male of this species in high plumage on the east shore of Point Pelee, Ont. It is now in my collection, numbered 147.— P. A. Taverner, *Detroit, Mich.*

The European Turnstone in Massachusetts.— An adult female Turnstone which I collected on Monomoy Island, Mass., on Sept. 8, 1892, Mr. Oberholser agrees with me in identifying as *Arenaria interpres*. As an adult male and two young Turnstones in my collection, taken by Mr. A. H. Dunham at Nome, Alaska, are intermediate between *A. interpres* and *A. morinella*, I have no doubt Mr. Oberholser was right in suggesting that the latter is merely a subspecies of the former (Osprey, Vol. IV, February, 1900, p. 96).— Louis B. Bishop, *New Haven, Conn.*

A Ruffed Grouse near Camden, South Carolina.— Late in the afternoon of December 27, 1904, a Ruffed Grouse (*Bonasa umbellus*) was shot a couple of miles from Camden, South Carolina, by Channing Wiley, Esq., a visiting sportsman, and within an hour was in my hands. I am sorry to say that it could not be preserved, since Mr. Wiley contributed it to the table of an invalid.

Camden is far outside the usual range of this bird in South Carolina,[1] and there seems to be no record of its appearance in the State at such a distance from the Alleghanies. More than this, the town contains several resident sportsmen of many years' experience, and none of them whom I have met knows of another occurrence of the Ruffed Grouse in that vicinity.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

Note on the Crop Contents of a Nestling Mourning Dove (*Zenaidura macroura*).— The crop contents of a nestling of this species taken at Boxford, Mass., on August 12, 1905, were sent to Prof. Beal at Washington, and the following interesting report was returned:

"Contents of crop and stomach of nestling *Zenaidura macroura* from Boxford, Mass.

70 seeds of buckwheat (*Fagopyrum fagopyrum*), 40 %.
3 seeds of smartweed (*Polygonum aviculare*), 1.5 %.
171 achenes of ragweed (*Ambrosia artemisiæfolia*), 12 %.
17 seeds of blue curls (*Trichostema dichotomum*), 2 %.
17 seeds of a violet (*Viola* sp.) 1.25 %.
89 seeds of Timothy (*Phleum pratense*), 3 %.
836 seeds of green and yellow Foxtail (*Chætochloa viridis* and *C. glauca*), 35%.
1 seed of *Paspalum* sp. 0.25 %.
Several fragments of seeds which may be the remains of 'pigeon milk,' 2 %.
Bits of a milliped, 1 %.
1 snail and fragments of another, 1 %.
Bits of egg shell, probably from nest, 1 %.
Animal matter, 3 %.
Vegetable matter, 97 %.

Gravel was 10 % of the entire contents.— *W. L. McAtee*, Dec. 2, 1905."

It would seem, therefore, that 'pigeon's milk' does not constitute the entire food of the young during their whole stay in the nest.

As a help in estimating the age of the bird, it may be stated that on July 16, 1905, the nest, containing one egg, was found at Boxford, by Mr. F. H. Allen.

The nest was in a white pine, 19 feet from the ground, in a crotch close to the main trunk. On July 22, Mr. Allen and I found two eggs in the nest. On August 12, one of the adults was seen sitting on the nest, and it did not

[1] See, especially, Loomis, Auk, III, p. 483.

move until Mr. Allen had climbed within four feet of the nest. Then there was a sudden avalanche of birds, showing much white in the tails. The old bird struck the ground within 15 yards of the tree and disappeared in the bushes in the usual wounded-bird style. One of the young birds lost itself in the bushes near at hand, while the other remained motionless on the open ground within ten yards of the tree. Here it could be discerned with great difficulty owing to its coloration. I easily caught the bird, and was interested to find its crop, covered mostly with bare skin, bulging with solid contents whose analysis has been given above.

The measurements of the dried skin are: length, 7.10 inches; wing, 4.10 inches; tail, 2.15 inches.— CHARLES W. TOWNSEND, M. D., *Boston, Mass.*

Long-eared Owls resident at Flushing, Long Island, N. Y.—Some time ago I wrote (Auk, XIX, 1902, p. 398) regarding the Barn Owls which formerly occupied a church steeple on Bowne Avenue in Flushing, Borough of Queens. It may be of interest to you to know that within a few hundred yards of my studio here on Bowne Avenue, there are now roosting six Long-eared Owls (*Asio wilsonianus*). This family of owls has been in and about this neighborhood for several years. They breed here, and this last season they wintered here. Probably they have done so all along.

I have examined a number of their pellets and found in them nothing but the remains of mice with now and then the bones of an English sparrow. If this is the regular diet of these birds, which from different authorities consulted I infer to be a fact, it might be well to plant a colony of Long-eared Owls in every city and village in the United States.

The birds roost in the thick foliage of an evergreen tree, but when watched too closely do not hesitate to leave the tree and fly about in broad daylight, and the manner in which they dodge obstructions when approaching their former perch, makes it evident that their eyesight is very good even in daylight.— DAN BEARD, *Flushing, N. Y.*

Nest of Saw-whet Owl at Bridgewater, Mass.— Upon Patriots' Day (April 19, 1906) in Bridgewater, Plymouth County, Mass., I found a nest of the Saw-whet Owl (*Cryptoglaux acadica*). An old Flicker's excavation, about 16 feet from the ground in a decayed poplar stub, furnished the site. In the bottom of the excavation was an old squirrel's nest, and a quantity of hair and feathers from small animals and birds evidently killed and eaten by the owl. Upon this mass the eggs, 4 in number, were placed.— ARTHUR C. DYKE, *Bridgewater, Mass.*

Uranomitra salvini in Arizona.— In a collection of bird skins made for me by Mr. H. W. Marsden in the Huachuca Mountains of Arizona in the summer of 1905 I found a young female hummingbird, taken at Palmerlee, Cochise County, on July 4, which I was unable to refer to any species recorded in the A. O. U. Check-List. Mr. Oberholser kindly compared this skin with the hummingbirds in the National Museum in Washington and concluded that it was the young of *Uranomitra salvini*

(Brewster). (Brewster, Auk, X, July, 1893, p. 214.) Mr. Brewster very generously lent me the type — an adult male — and only known specimen of *U. salvini*, and I am quite confident my bird is the same, and that the species is a valid one.

My bird resembles the type very closely, differing from it only in the following particulars, which, with the possible exception of the color of the bill, are what were to be expected in the young. The blue iridescent feathers of the crown are duller; the green back duller with the iridescent feathers more restricted; the lower back paler; the upper tail-coverts and rectrices more bronze; the iridescent blue and green feathers of the sides of neck and breast duller, fewer and more restricted; and the sides of the body brownish gray instead of bright green. The feathers of the upper parts, especially the lower back and rump, are edged with pale rusty, as is usual with young hummingbirds. Both have the white lower tail-coverts, clayey buff wash on throat, and pale tips to the rectrices. The bill of the young bird is slightly broader, the maxilla darker, being the same brownish black at tip and becoming dull reddish brown only at base; and the mandible paler and more yellowish except at tip. The measurements of the two are practically identical.

Nacosari, where Mr. Brewster's bird was collected, is only about 80 miles from Palmerlee; while Mr. Oberholser informs me that *U. verticalis* (*quadricolor*) its nearest geographical ally, has not been taken north of Durango.

Thanks to Dr. Allen, I have compared my skin with adults and young of other members of this genus in the Elliot collection of the American Museum of Natural History, and find it much smaller than *U. verticalis* and resembling it in plumage only very slightly. It more closely approaches *U. cyanocephala* and *U. cyaneicollis*, but has a longer bill and shorter wing than either; cerulean blue crown, and on sides of neck, instead of purplish blue, bluish green or green; bluish green upper back instead of golden green or green; and white under tail-coverts. Mr. Oberholser tells me it differs in a similar manner from *U. violiceps*.

My thanks are due to the above ornithologists and to Mr. D. G. Elliot and Mr. J. H. Fleming for their assistance in identifying the bird.

Measurements in inches.

	U. salvini No. 24125 Coll. W. Brewster	*U. salvini* No. 13964 Coll. L. B. Bishop	*U. cyanocephala* No. 10203 Coll. J. H. Fleming
Length		4.25	
Extent		5.50	
Wing	2.07	2.11	2.32
Tail	1.27	1.28	1.39
Exposed culmen	.88	.84	.71

— Louis B. Bishop, *New Haven, Conn.*

Nesting of Crossbills in Nova Scotia.— During the past winter, which was very mild and open, numbers of American and White-winged Crossbills were found nesting in the vicinity of Wolfville, Kings Co.

The first nests discovered were those of the American Crossbill (*Loxia curvirostra minor*) Jan. 31, three in number. Of these, two contained young, just hatched. The others held three eggs, advanced in incubation. These nests were not far apart, in a small, open grove of spruce, fir, and hemlock, and were similarly placed on horizontal limbs of spruces, from twenty to forty feet from the ground and well out from the trunk. Some fifteen or twenty of the birds were constantly feeding about this grove, and by their noisy chatterings and restless movements attracted my attention to them.

Though hardly expecting to find them nesting at so early a date, I nevertheless watched them closely. Soon I saw a single bird leave the feeding flock. Darting away through the trees he disappeared among the lower branches from which he soon emerged and joined his companions. A careful search among the branches into which this bird had flown, revealed a nest, well concealed amid clustering sprigs of the evergreen. The sitting female carefully watched my movements as I approached the nest and upon my reaching out to touch her raised the feathers on her crown, opened her bill, and in short made herself look quite ferocious. Finally sliding off the nest, she flitted about within a few feet of me, keeping up an angry chirping, in which she was soon joined by her mate. This nest was some twenty feet up, and fully ten feet out from the trunk, saddled on the horizontal limb among clusters of the foliage and protected from above by overhanging branches. The other two nests were discovered in the same way — by watching the feeding flock, and noting the movements of birds leaving it from time to time.

During the following months, many other nests were found. Great diversity in choice of nesting sites among individuals of both species was noticed to exist. Nests of the American Crossbill were found in spruces, firs, and hemlocks at elevations ranging from ten to eighty feet. Most nests were found in spruces of large growth and with thick, spreading branches in open woods. Others were found in dense groves of evergreens in the little bunch of foliage at the extreme top of otherwise denuded firs, while still others were found concealed in dead trees of the same kind among the hanging moss and twigs, close to the trunk. A few nests were found in young hemlocks in the little clusters of twigs that sprout out at the junction of the branches and trunk.

The character of the woods did not seem to affect the choice of the birds much, provided that cone-bearing trees were near at hand. Thus nests were found in dry open upland woods as well as in the low dense growths of the swamps, and in woods of mixed growth as well as in evergreens alone.

Nests of the White-winged species (*Loxia leucoptera*) were found in

spruces only, though some were in trees of large growth and seventy feet from the ground, while others were placed low in small bushes.

During the period of incubation the sitting females were observed to be fed by the males, in the same manner that the young are fed by their parents — that is by the disgorging of the contents of the crop into the open mouth of the bird to be fed. When bringing his mate food in this manner the male crossbill would announce his coming by loud pipings, and perching upon a near by tree would continue his excited chirpings some minutes and then fly direct to the nest. Often after having thus fed his mate, he would circle in the air about his home on outstretched flapping wings, giving vent to a perfect ecstasy of song.

The nests of both species are composed chiefly of twigs and beard-moss. Sometimes feathers, strips of decayed wood and bark, grasses and plant down, were added. On the whole the nests are fairly well built and compact, though quite a difference in this respect is noticeable in different cases.

The nesting period of these birds seems very extended. Thus on Jan. 31, nests were found with young. The birds have been nesting ever since, and at this date (May 7) flocks of full fledged young can be seen feeding about the woods, while nests with eggs are still to be found. Some years ago a nest of the American Crossbill was found on August 4 containing newly hatched young.— HAROLD F. TUFTS, *Wolfville, Nova Scotia.*

Breeding of the Savanna Sparrow (*Passerculus sandwichensis savanna*) **in Southern New Jersey.**— On July 8, 1903, while on a short trip along the coast of southern New Jersey, I was surprised to find a pair of Savanna Sparrows breeding at the extreme lower end of Seven Mile Beach, Cape May County. The nest was situated on the ground in a dry, sandy, open space back of the sand dunes, and was concealed by weeds and drift. It contained three young birds a few days old and one infertile egg. The old birds were seen excellently at close range through a field-glass and thoroughly identified. Being without a gun neither of them was secured, but the nest, egg and one young were taken, the remaining fledglings being left in an improvised nest. The young bird was kept alive for a day or two longer and then preserved in formalin. His plumage is sufficiently developed to show its general coloration, and this, and the form of the feet, together with the nest and egg, aside from the observations made in the field, are sufficient to render the identification certain.

The southernmost limit of the breeding range of the Savanna Sparrow on the Atlantic coast is given by Ridgway (1901) as Connecticut, but there are specimens in the Museum collection taken in summer on Long Island, New York, as follows: Centre Moriches, May 30 (four adults); Good Ground, July 1 (one adult); Gardiner's Island, Aug. 12 (1 young). The species has also been recorded by E. C. Thurber in his List of Birds of Morris Co., N. J., as breeding in the vicinity of Morristown, in northern New Jersey, an inland locality. The present record carries the known breeding range about 120 miles still further south.— W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Bachman's Finch in Montgomery County, Virginia.—On the afternoon of May 2, I was in an open pasture on a hillside near Blacksburg, Va. Passing a small brush heap, a sparrow that I took for a Field Sparrow at a casual glance flew to a small tree about twelve feet from the ground. As it lit, it sang, and although for years I had not heard that song, I was at once taken back to the pine woods near Charleston, S. C., where, as a youth I had known so well Bachman's Finch (*Peucæa bachmani*). I walked under and around the bird, which sat motionless only two yards overhead, and examined it closely; finally it flew to a small clump of bushes, and by moving quietly I got within a yard of it and easily verified my recognition of it as Bachman's Finch. As I had a good series of specimens I forbore to kill the bird, for my identification of it was complete and its song saved it. As soon as I returned home I examined my specimens and amply satisfied myself. Mr. Jno. W. Daniel has noted this bird as breeding near Lynchburg, Va., but still I think this worthy of note.

I see that Mr. Nathan C. Brown has taken Bachman's Finch in Camden, S. C., on January 25. I have always thought the bird a winter resident on the South Carolina seaboard, for I have taken it in Berkeley County in late December, and Mr. Wayne also notes it, I believe, near Charleston in January.— Ellison A. Smyth, Jr., *Va. Polytechnic Inst., Blacksburg, Va.*

The Rough-winged Swallow and Duck Hawk near Springfield, Mass. — *Stelgidopteryx serripennis.* A Rough-winged Swallow was captured by William Dearden in Longmeadow, near Springfield, May 17, 1906. There is no previous record of the occurrence of an individual of this species in the Connecticut Valley in Massachusetts since 1851.

Falco peregrinus anatum. About forty years ago much interest was manifested among ornithologists and others by the fact being made known that the Duck Hawk breeds regularly among the nearly inaccessible clefts that are to be found in the vicinity of the peaks of Mounts Tom and Holyoke that arise from the trap rock range that crosses a portion of the Connecticut Valley some fifteen miles north of Springfield, and from that time to this, nests have been seen there almost every year. In 1905 nearly fledged young were found there the last of May, and this year near the same place another nest was discovered containing four eggs. In recent years this portion of the mountain range has been made accessible by reason of the construction of lines of electric railroads, and hundreds visit the region of the Duck Hawk's breeding place where one person did in the sixties, but notwithstanding this, they still continue to select this locality for their summer home.— Robert O. Morris, *Springfield, Mass.*

Occurrence of the Titlark (*Anthus pensilvanicus*) **in Maine, in Spring.** — On the afternoon of May 15, 1889, my brother, Mr. Ralph H. Norton, and I saw a flock of twenty-four Titlarks alight in a field of young grain,

on the outskirts of Saccarappa village, which forms the west end of Westbrook. My brother shot one of these birds (a female), for my collection, whereupon the others left the vicinity.

As changes have been wrought, since that date, it seems well to be explicit about the place. This was in the field owned by Capt. Issac Quimby at a point close to Mechanic Street and about two hundred yards south of the street since accepted as Green Street.

The instance has been reported in Bulletin No. 3, University of Maine, p. 122 (Knight's Birds of Maine), but as I am not aware of another spring record for Maine, yet published, it has seemed desirable to give the particulars.— ARTHUR H. NORTON, *Museum of Natural History, Portland, Maine.*

The Titlark at Portland, Maine, in Spring.— The spring record of the Titlark (*Anthus pensilvanicus*) in Maine should include a solitary bird which I saw about half past three o'clock in the afternoon of May 10, 1905, within the city limits of Portland. It passed me close at hand, constantly calling and flying low in a southwesterly direction, near the north end of St. John Street, where there are vacant lots extending to open fields.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Carolina Chickadee in Southern Michigan.— Last winter P. A. Taverner and I were examining my small series of local Chickadees and among them found one bird that we were certain was *Penthestes carolinensis carolinensis.* Upon sending the bird to Washington for confirmation Prof. Ridgway returned it as a Carolina Chickadee, probably an immature male.

I secured this bird on July 17, 1899, in a small woodland in Ecorse Township, Wayne Co., Mich. As far as I can ascertain this is the first bird of this species that has been taken in Michigan. The specimen is number 283 in my collection.— BRADSHAW H. SWALES, *Detroit, Mich.*

A Great Flight of Robins and Cedar-birds.— Camden, South Carolina, was visited on February 3, 1905, by a storm of sleet and snow. At eight o'clock next morning the town had a wintry aspect, and the thermometer indicated only twenty-two degress. There was no sun, but the storm was at an end and the northeast wind was light. When I first looked out of doors, Robins and Cedar-birds were flying over in large numbers, going about west-northwest. It soon became evident that the flight was unusual, and at twenty minutes to nine o'clock I took up a position at a window from which I had an unobstructed view for long distances towards the east, north and west. Here for an hour and a half, pencil and paper in hand, I endeavored to count the passing birds.

The Robins flew in open order and were little more numerous at one time than another. The Cedar-birds, however, though many of them

also went by in open order, were mostly gathered in masses containing from twenty to four hundred birds or more each. They swept along very rapidly. Their largest masses suggested scudding clouds and were decidedly impressive. The Robins moved a good deal more slowly. Both species flew at altitudes varying from twenty to one hundred yards from the ground, and most of the birds passed within a distance of one hundred and fifty yards from my window,— none, I think, farther away than about an eighth of a mile.

At ten minutes past ten o'clock I was obliged to take up some work which was awaiting me. But I frequently looked out of the window after that hour, and could detect no diminution in the number of passing birds until after one o'clock P. M. All the afternoon they flew by in gradually diminishing numbers, a good many Robins tarrying for brief periods in the fields before my window. Throughout the day the direction of the flight was the same, and there was practically no retrograding: altogether I saw less than a hundred birds coming back, all Robins.

I found that I had counted a total of twenty thousand four hundred birds in the hour and a half, at least fourteen thousand of which were Cedar-birds. These figures are much inside the mark. Between ten minutes past ten A. M. and one o'clock P. M. twice the number of birds that I had previously counted must have gone by. A multitude had passed before I began counting. Ten thousand, at the lowest estimate possible, must have followed during the remainder of the afternoon. In the course of the day, therefore, many more than sixty thousand birds passed over that part of Camden which I overlooked. I believe that seventy-five thousand — fifty thousand Cedar-birds — would be too low an estimate. The path of the flight also extended south of my position at the window. I cannot say how far it extended, and I can offer no estimate of the number of birds which passed on that side.

As usual, Robins had this year become more common in and about the town with the approach of February, but there had been no indication of any massing for this flight. Cedar-birds had been common throughout the previous months of the winter. I had never seen them in large numbers, however, except on February 3 — the day before the flight — when I found some five hundred of them restlessly flying about a near by swamp. They all came together here at times in a dense mass, only to break up again into comparatively small parties. The two species were numerous in the vicinity for weeks thereafter. Still it was plain that the great majority of the host which I had seen had passed on.

While at Camden during the winters of 1903–4 and 1905–6, I witnessed nothing resembling this flight.— NATHAN CLIFFORD BROWN, *Portland, Maine.*

Chuck-will's-widow and Mockingbird in Ontario.— CHUCK-WILL'S-WIDOW, *Antrostomus carolinensis.*— I took a male of this species on May

19, 1906, at Point Pelee, Essex County, Ontario. The bird was flushed from the ground and lit in a red cedar, giving an excellent chance to observe it, and I was fortunately able to take it. The bird was found about half a mile from the end of the Point on the west side. This is the first Canadian record.

MOCKINGBIRD. *Mimus polyglottos.*— I took a male on May 20, 1906, at Point Pelee, Essex County, Ontario. The bird was found near an old orchard on the west side about five miles from the end of the point.

In both birds the sexual organs were well developed.

Mr. B. H. Swales and Mr. P. A. Taverner were with me when both birds were shot.— JAMES H. FLEMING, *Toronto, Ontario.*

Wayne County, Michigan, Notes.— Secured a male Kentucky Warbler (*Oporornis formosa*) on May 6, 1906. The bird was in company with a pair of Ovenbirds in low swampy woods on P. C. 619, Gratiot Township. This is a rare bird in the State and the only county record. Visited a portion of Ecorse Township on May 9 and secured a male Blue-winged Warbler (*Helminthophila pinus*) on P. C. 49. This is the second record for the county, the first being a pair seen by me May 29, 1902. Also secured a male Orange-crowned Warbler (*Helminthophila celata*) in the same woods. This is the second county record and the first spring record. I also met with two female Wilson's Phalaropes (*Steganopus tricolor*) on P. C. 50 but failed to secure them. I have since spoken to Mr. P. A. Taverner in regard to them and learn that he observed one on the same grounds May 5. His was also a female and possibly one of the same birds seen by me. These constitute the only county records.— J. CLAIRE WOOD, *Detroit, Michigan.*

Notes from Connecticut.— The following specimens in my collection seem worthy of being recorded in 'The Auk,' as the races to which most of them belong are unreported from Connecticut. All were received in the flesh and almost all were shot by myself. Mr. Oberholser has kindly examined the representatives of western subspecies, except *Symphemia semipalmata inornata* and *Dendroica palmarum*, and agrees with my identification.

Symphemia semipalmata inornata.— Young female, Stony Creek, Aug. 15, 1897. Willets found at present on the Atlantic coast from Massachusetts south during the fall migration belong almost exclusively to this subspecies.

Accipiter velox. Of 20 female Sharp-shinned Hawks, chiefly young, which I have skinned since August, 1902, both ovaries were developed in 17. As a rule the left was the larger, but occasionally both were small and distinguishable from testes only by a magnifying glass. I suspect some unusually large 'males' in collections are in reality such females. I have also found both ovaries developed, though rarely, in *Accipiter cooperi, Buteo platypterus, Asio wilsonianus,* and *Cryptoglaux acadica.*

Otocoris alpestris hoyti. Four adult males,— Guilford, March 7, 1903; and West Haven, January 24, 1905.

Agelaius phœniceus fortis. North Haven, male adult, Dec. 25, 1901; male juvenile and female juvenile, Jan. 10, 1902; male juvenile, Nov. 11, 1903.

Helminthophila lawrencei. On May 31, 1905, while collecting with Mr. H. W. Beers and Mr. J. C. A. Meeker, I secured in East Haven, Conn., a male *H. lawrencei* having the full black chin. As it was undoubtedly a breeding bird we searched the vicinity carefully for the female and nest but without result, and absence from town prevented my looking for the young later that summer.

Believing some of the young might return to that neighborhood this year I revisited it on May 24, and collected another male within 300 yards of where the other was taken. This bird has the feathers of the chin yellow; the extreme upper throat black at base tipped with yellow; and the lower throat black, each barb of each feather being narrowly edged with yellow, these giving a brownish effect. In other respects it resembles the bird taken last year, except that the wing-bars are more yellow, and shows the plumage that might be expected if, as I believe, it was the young of that bird with a female *H. pinus.* Fourteen others of this genus examined within half a mile of this spot the same morning were all Blue-winged Warblers.

Dendroica palmarum. New Haven, male juvenile, Sept. 24 and Oct. 1, 1895; female juvenile, Sept. 19, 1903; Sept. 26 (2) and Oct. 5, 1905.

Seiurus noveboracensis notabilis. Hamden, Sept. 7, 1904, female juvenile; East Haven, Sept. 21, 1904, male juvenile; Orange, May 20, 1905, male adult.

Geothlypis trichas brachidactyla. A young male with the bill twisted into much the shape of that of a crossbill — the maxilla bending over the mandible to the right with a notch in the side worn by the latter — was collected in East Haven on Oct. 4, 1905. It was fat and otherwise in good condition, and was feeding in the top of a small tree about twelve feet from the ground like the tree-warblers.

Sitta carolinensis. Two young females with the crown black and almost as lustrous as in the male were taken in East Haven on Nov. 17, 1900, and Dec. 19, 1905.

Regulus calendula. A young male with the crown patch unusually small and orange-buff instead of scarlet-vermillion was collected in New Haven on Oct. 28, 1904. The entire plumage of this bird is unusually gray and the broken eye-ring, lores and forehead are distinctly white; but as it has the nasal tuft, slender, longer bill, and the measurements of *calendula* I do not think it is a hybrid with *satrapa.*

Hylocichla fuscescens salicicola. Four adult males,— New Haven, Sept. 23, 1895; Woodbridge, May 5, 1894; and East Haven, May 16, 1900, and May 14, 1904.— Louis B. Bishop, *New Haven, Conn.*

The Shedding of the Stomach Lining by Birds.— The stomach of a bird is lined by a corneous layer which, as is well known, strips very readily from the mucous coat after death. The fact that it sometimes separates naturally during the life of the bird is, however, less widely known.

In Newton's 'Dictionary of Birds,' p. 918, is summed up the knowledge of this occurrence in the case of Old World birds. It is said: "As a rule the cuticle . . . .is continuously wearing away and being reproduced, but many cases are known in which most of the lining is suddenly cast off and ejected through the mouth, as has been observed in *Pastor roseus, Sturnus vulgaris, Turdus viscivorous, Carine noctua, Cuculus canorus,* and especially in *Buceros.*" These cases are discussed in European publications but in American journals the phenomenon has received little attention.

A most interesting observation in the case of *Himantopus mexicanus* shows, that not only is the cuticular coat of the gizzard of birds worn down by constant trituration or disgorged *in toto,* as stated in the above quotation, but that it is also sometimes shed off in the gizzard and there ground up and disposed of in the same manner as food. The bird in question was collected at St. Joseph Island, Texas, Augsut 14, 1905. In examining its stomach contents, which was largely made up of aquatic hemiptera and coleoptera and grasshoppers, several bits of a translucent horny substance were separated for further study to determine their identity. Turning to them a brief examination convinced me that the material was a fragmentary stomach lining. This conclusion has subsequently been confirmed by most careful comparison with the present functioning lining of the same stomach, with which the fragments agree in every detail of structure. The present lining is hard and readily peels off, as is usual in birds.

Suggestive data are on hand in the case of a few other species, but in the above mentioned instance there seems to be no doubt that the stomach lining had been shed. Observations on this point are necessarily of a desultory nature and for that reason the case here noted is now put on record.— W. L. McAtee, *Washington, D. C.*

Virginia Creeper as a Winter Food for Birds. — Occasionally, we discover some favorite food supply which attracts nearly all the birds of the neighborhood. Such is furnished in some localities by the Virginia Creeper. On account of the climbing habit of this vine the berries escape being covered in winter and thus increase in importance to the birds with the severity of weather. Through all the cold, zero or below, through periods of sleet and snow and ice that sealed up everything on or near the ground, the writer has observed several species of birds feeding upon these berries.

The observations were made on the campus of the University of Indiana,

where several of the old buildings are thickly covered with the creeper. In the fall, winter, and early spring the vines are hung with innumerable clusters of berries and to them are attracted many of the winter resident birds. A year or more ago, at almost any hour, a glance through a window would reveal several birds, some of them perhaps within reach, clinging to the vines, feeding greedily. On one occasion, on opening a window, the writer surprised seven birds, representing six species, which were almost hidden in the vines encroaching upon the window opening. Of these a Flicker and a Cardinal whisked away but the others, including two Bluebirds, a Chickadee, a Tufted Titmouse and a White-breasted Nuthatch, trusted him and continued the feast. At times two or three Titmice could be seen twisting in and out among the berries, and brilliant Redheads often came. Indeed the number of charming new glimpses of birds made us almost wish there were Virginia creeper every where.

Bluebirds were the most constant visitors to the vines and a flock of them fed almost exclusively upon the berries. Each winter they frequented a tree midway between two great vine-covered walls and seemed never to leave the vicinity except for water. They were observed during one winter on practically every day from October 20 to February 20. Flickers relished the fruit almost as well. They liked to feed in vines upon which the sun was shining, and at one time five of these handsome birds were seen together on a thickly covered wall. On another occasion two Flickers, two Red-headed Woodpeckers and six Bluebirds feeding in the same place formed a pretty and most animated group.

An idea of the relative numbers in which birds of twelve species came to the berries may be obtained from a tabulation of several typical lists made on winter days in 1901, 1902 and 1903. Nine such lists have been selected and the totals for each species follow: Bluebirds, 43; Flickers, 21; Robins, 15; Tufted Titmice, 7; Juncos, 7; White-breasted Nuthatches, 4; Red-headed Woodpeckers, 3; Blue Jays, 3; Chickadees, 2; Cardinals, 2, and Chewink, 1.

The last named bird would not be expected to visit a busy college campus often, and in fact this was one of only two such occurrences noted in four years. The reason for the visit to the berries is plain: nearly all other food in the country was under a coat of ice. On the day we were honored by the Chewink, six other species, or seven in all, were seen in the vines, and two days previously nine were observed.

Such liberal patronage shows conclusively how birds value the Virginia creeper. The plant retains its fruit almost half the year and is therefore particularly valuable as an early spring bird food. To those who care to attract winter birds the Virginia creeper, both from its usefulness in this respect and on account of its decidedly ornamental appearance, is to be recommended most highly.— W. L. McAtee, *Washington, D. C.*

The Michigan Ornithological Club.— The annual meeting of the Michigan Ornithological Club was held in conjunction with the annual meeting

of the Section of Zoölogy of the Michigan Academy of Science in the Museum Lecture Room, Ann Arbor, on Friday, March 30, 1906. Chas. C. Adams, vice-president of the section of zoölogy, presided. The following ornithological papers were presented: 'Bird Dissemination of *Juniperus*,' Frank J. Phillips; 'An Ecological Study of the Birds of Ypsilanti Bayou,' Max M. Peet; 'Twenty-five years of Bird Migration at Ann Arbor,' Norman A. Wood; 'Notes on the Birds of the Michigan Forest Reserve,' E. H. Frothingham; 'The Bird Life of Ann Arbor, Michigan, and Vicinity' (by title), Norman A. Wood; 'A Topographical Study of the Birds of the "Overflow" at Ann Arbor, Mich.,' R. A. Brown; 'An Ecological Survey of Isle Royal, Lake Superior,' Chas. C. Adams; 'The Ecological Distribution of the Birds on Isle Royal,' Otto McCreary; 'The Fall Migration of Birds on Isle Royal' (by title), Max M. Peet. Professor Walter B. Barrows, president of the Club and of the Academy, gave his presidental address before the Academy on 'Facts and Fancies in Bird Migration' in the lecture room of the physical laboratory on Thursday evening.

A business meeting was held in the afternoon in the office of the curator of the University Museum. The officers for 1906–7 were elected as follows: President, Prof. Walter B. Barrows, Agricultural College; Vice-Presidents, J. Claire Wood, Detroit, Edward Arnold, Battle Creek, Norman A. Wood, Ann Arbor; Secretary, Dr. Alexander W. Blain, Jr., Detroit; Treasurer, Frederick C. Hubel, Detroit; Editor of 'Bulletin,' Walter B. Barrows; Associate Editors, Dr. Wm. H. Dunham, Kalkaska, Dr. R. A. Brown, Kalamazoo.— A. W. Blain, Jr., *Sec'y.*

RECENT LITERATURE.

Buturlin's 'The Breeding-grounds of the Rosy Gull.'[1]— The breeding-grounds of the Rosy Gull (*Rhodostethia rosea*) long eluded discovery, but Dr. Buturlin has now found one of its summer haunts in the delta of the Kolymá River, on the Arctic coast of eastern Siberia. Here (latitude 69° N., long. 160° E.) in June, 1905, he found small colonies of these birds breeding and secured a good series of skins of both adults and downy young, and 36 eggs. The first Rosy Gulls were seen May 30 and 31; "they had evidently just finished their migration and were tired after their exertions." In a few hours they had recovered from their fatigue. They were quite easy of approach, and Dr. Buturlin was able

[1] The Breeding-grounds of the Rosy Gull. By S. A. Buturlin. Ibis, 1906, pp. 131–139, 333–337.

to observe them and procure specimens whenever he wished. Later he "found the Rosy Gull nesting in little colonies of from two or three to ten or fifteen pairs, in company with the Black-capped Tern of the delta." From June 3 onward the gulls became scarce on the river, and were dispersed over the delta, "though the snow was still deep in the bushy portions and the ice had only melted for a distance of a fathom or two from the banks." On the 13th of June several clutches of eggs, all somewhat incubated, were taken. The last four clutches, taken June 26, "were so much incubated that the embryros were covered with down, and would have been hatched in a very few days."

"One of the colonies was on a piece of wet tundra near two lakes, a square kilometer in extent, covered with a labyrinth of pools of snow-water from two to six or even ten inches deep, but practicable in wading-boots, thanks to its floor of everlasting ice beneath the underlying mud. Between these pools, which were from fifteen to fifty feet in diameter, were pieces of very wet ground covered with *Carices*, damp mossy spots, and even tiny patches of comparatively dry bog covered with lichens or *Betula nana*. In this colony I found ten nests of *Rodostethia*, placed, among those of the Tern, on little mossy swamps almost bare of grass, evidently because the more grassy places were too wet and unsafe. But in the remaining colonies the state of affairs was otherwise; there the Tern nested on the moss — sometimes making no nest at all — and laid its one or two eggs much nearer to the dry parts of the little islands, which were perhaps a hundred yards long and from ten to twenty yards wide, while the Rosy Gulls made their nests on wet grassy spots or bogs much nearer to the water, and these nests rose from four to ten inches — generally from five to eight inches — above the surface. The hollow formed in the grass (dead grass of course, as green grass is hardly ever seen by the 20th of June) is about six or seven inches in diameter, but the nest proper is a hollow cup only about four or four and a half inches in diameter. It is composed of dry grass and *Carices*, sometimes with the addition of a few dry *Betula* or *Salix* leaves, while I once saw one made of white reindeer-moss." The number of eggs is nearly always three, but sometimes only two, while four are said to be often found. Downy young were taken July 6 and 7.

Dr. Buturlin gives a description of the eggs and of the downy young, and of the habits of the birds while at their breeding-grounds. In regard to their breeding range along this part of the Arctic coast, he states that "all the lowlands of the northern half of the Kolymá district (bordered by the rivers Chaun and Alazeya, the Arctic Ocean and the Stanovoi Mountains) are inhabited by *Rodostethia rosea*, and this area covers at least 160,000 square kilometers. In the eastern parts of the Verkhoyansk district it probably breeds up to the Indigirka River."

The account of this important discovery was written in the field, in two parts, dated respectively June 30 and July 10, 1905.— J. A. A.

Clarke's 'Birds of the South Orkney Islands.'[1]— The South Orkneys, situated about 600 miles southeast of the Falkland Islands, in about latitude 60° to 61° south, comprise a group of about a dozen small islands, discovered in 1821 and subsequently visited but three times prior to their exploration in 1903 by the Scottish National Antarctic Expedition, in the 'Scotia.' "So far as their Ornis is concerned," writes Mr. Clarke, "only two species of birds, and one of these problematical," had been previously alluded to. The 'Scotia' visited the islands in February, 1903, and at the end of March of the same year, after a successful voyage to the southern waters of Weddell Sea, went into winter quarters at Laurie Island, one of the only two large islands of the group. At the end of eight months she was freed from the ice on November 23, and immediately departed for the Falkland Island and Buenos Ayres to refit; but a party was left on the island, in charge of Mr. Mossman, the meteorologist, and Dr. Pirie, medical officer and geologist, to make collections throughout the summer months. To the labors of Dr. Pirie, says Mr. Clarke, "we owe most of our knowledge of bird-life of the island during this most interesting part of the year." Four species remained at the island throughout the winter, but by April all the others had departed, and the first spring movement began in October, when most of the species returned, the late comers arriving during the month of November. "During the summer bird-life was extremely abundant. Rookeries of the three species of Penguin (*Pygoscelis*) were numerous on the low rocky shores and less steep cliffs on various parts of the coast. Some of these bird-cities contained several millions of inhabitants, and their daily life presented scenes so remarkable as to be almost beyond description. . . . . The Ringed Penguin, hitherto regarded as being nowhere an abundant species, was found to have its metropolis at the South Orkneys, where the summer population on Laurie Is. alone was estimated at not less than one million birds."

The eggs of the Cape Petrel were here for the first time discovered, as were also the young of the Ringed Penguin and Snowy Petrel; the known range of other species was greatly extended. The collection of nearly 150 skins included previously unknown plumages, and representatives of 16 out of the 18 species known to occur at the islands; while the eggs obtained "numbered several thousands." Mr. Clarke is fortunate in having this rich material assigned to him for elaboration, and his report thereon shows that it has fallen into competent hands. Two colored plates illustrate young plumages of the Sheathbill, Snowy Petrel, and the Ringed Penguin; the eight halftones show the rookeries and nesting habits of penguins, petrels, and other species, among them Wilson's Petrel (*Oce-*

[1] Ornithological Results of the Scottish National Antarctic Expedition.— II. On the Birds of the South Orkney Islands. By Wm. Eagle Clarke, F. R. S. E., F. L. S., Royal Scottish Museum. Ibis, Jan. 1906, pp. 145–187, pll. iii–xiii.

anites oceanicus), which " resorts in thousands to Laurie Is. to nest on the cliffs of its remarkably extensive coast-line." This species is one of the last to reach the islands in spring (Nov. 11), and one of the earliest to leave (March 23).— J. A. A.

Menegaux and Hellmayr on the Passeres Tracheophones of the Paris Museum.— As indicated by the title, this important series of papers[1] is a critical revision of the American Tracheophones contained in the Paris Museum of Natural History, with special reference to species of supposed doubtful standing, and to the actual types of species contained in the French National Museum. The specimens of this group are said to number several thousands, and apparently represent about a third of the known species, including five here described as new. About 120 species are represented by types, and a number of others by cotypes. Here are preserved the types and other material resulting from the French voyages of exploration made in the early part of the last century, as those of d'Orbigny, Castelnau, Deville, A. St.-Hilaire, etc. Much of this historic material, the basis of our knowledge of many of the species of this group, has neither been studied anew nor carefully examined, according to these authors, by any recent investigators, with the result that doubt has sometimes been expressed as to the validity of some of the species. Some of the types had been lost sight of in the mass of specimens, being without scientific names, but it has been possible to rescue and identify them " with certainty " through various clues furnished by their labels. A few types appear to have quite disappeared, but among those here catalogued and commented upon are the types of 20 species described by Lafresnaye and d'Orbigny, of 9 described by Lafresnaye, of 13 described by Des Murs, of 12 described by Vieillot, of 11 described by Lesson, of 8 described by Pucheran, and of a smaller number described by various other authors.

Of special interest to American ornithologists is a statement in reference to the collection of Baron Lafresnaye, sold after his death to the Boston Society of Natural History. This is to the effect that E. Verreaux, a natural history dealer, before placing the collection on sale, labeled and catalogued the specimens, and indicated many as types which have no right to be so considered. Upon the authority of these indications American ornithologists have assumed, with apparently good reason, that the types of various species described by Lafresnaye and d'Orbigny in their preliminary papers on d'Orbigny's collection, published in the 'Magazin de Zoologie,' were really those so indicated in the Lafresnaye Collection.

[1] Etudes des espèces critiques et des types du groupe des Passereaux trachéophones de l'Amèrique tropicale appartenant aux Collections du Muséum. Par MM. A. Menegaux et C.-E. Hellmayr. I. Conopophagidés, II. Hylactidés, Bull. du Mus. d'histoire naturelle [de Paris], 1905, pp. 372–381. III. Dendrocolaptidés, Mém. de la Soc. d'hist. nat. d'Autun, XIX, 1906, pp. 43–126, (also separate, *repaged*). IV. Formicariidés, Bull. de la Soc. Philomat. de Paris, 1906, pp. 24–58.

But it is known, on the other hand, say these authors, that Lafresnaye received, for this collaboration, only duplicates, the true types remaining in the Paris Museum. "Consequently the specimens in the Paris Museum should be considered as the *true types* and those of Boston have no importance from the point of view of nomenclature, and above all not that which Americans seek to attribute to them."[1]

It is quite reasonable to suppose that where species were represented by a single specimen in the material collected on d'Orbigny's South American expedition, the specimens all remained in the National Museum, and that the types of new species should also be there preserved. But Lafresnaye's collection consisted of something more than duplicates from the Paris Museum, and he described many species without any association with d'Orbigny or his specimens, and it therefore seems a rather too sweeping condemnation to assume that the alleged presence of types in the Lafresnaye collection, in the Boston Society of Natural History, is nothing more than a "legend" that our hasty friends consider it a duty to the Paris Museum to reduce to nothing.

It is well to guard with jealousy the interests of one's own institution, but one also should not disparage lightly the good name of other institutions. It would be much more convincing and satisfactory if our authors had stated more explicitly the proofs that certain specimens in the Paris Museum are "les *vrais types*" — that is, how they were determined to be such, for presumably not many were thus indicated by the authors of the species they are alleged to represent. This is suggested in part by the statement in respect to how certain types, "perdus au milieu d'une masse de spécimens," were identified, and also by such cases as, for instance, *Nasica guttatoides* Lafr. (Rev. et Mag. zool., 1850, p. 387). Lafresnaye says: "Cette espèce a êtê rapportée de Loretta, au Musée, par l'expedition Castelnaud; mais nous la possédions déja dans notre collection, l'ayant achetée d'un marchand avec quelques oiseaux de Colombie." The original Lafresnaye specimen is still in the Lafresnaye collection in Boston, an adult bird in good condition, as cited by Elliot (Auk, VII, 1890, p. 186). Why then should the young female ("♀ jeune"), obtained on the Castelnaud Expedition, and only incidentally mentioned by Lafresnaye, be claimed as the type of *N. guttatoides* Lafr.? The figuring five years later of the young specimen in the 'Oiseaux' of Castelnau's 'Voyage' by Des Murs certainly could not make it the *true* type of this species.

---

[1] Donc les spécimens du Muséum de Paris doivent être considérés comme les *vrais types* et ceux de Boston ne peuvent avoir aucune importance au point de vue de la nomenclature, et surtout pas celle que les Américaines cherchent à leur attribuer.

Ce sont des animaux semblables, mais ce ne sont pas les types qui seuls font foi auprès des ornithologistes. C'est sur quoi nous serons plusieurs fois forcés d'insister dans notre travail, et nous espérons avoir ainsi réduit à néant une légende qui tendait à s'acclimater dans le monde scientifique au préjudice de la riche collection du Muséum de Paris.— *Menegaux et Hellmayr*, Bull. du Mus. d'hist. nat., 1905, No. 6, p. 374.

We would not for a moment question that where Lafresnaye's material is accredited in the original descriptions to the Paris Museum, or where he was joint author with d'Orbigny in publishing the species of d'Orbigny's Expedition, the true types are those now claimed as such in the Paris Museum. But sweepingly to denounce the alleged types in the Lafresnaye collection as spurious is quite another matter.

Besides, we believe it is not quite true that the Lafresnaye collection was catalogued and labeled by E. Verreaux before it was placed on sale, and that in this way many specimens were indicated as types that were not types. Our information is to the effect that Dr. Henry Bryant purchased the Lafresnaye collection after an examination of it while it was still at Falaise, and not from an inspection of a catalogue; and furthermore that the catalogue was made by Jules Verreaux and not by his brother Eduard, the former being an excellent ornithologist, capable of doing the work with proper discrimination through previous familiarity with its contents, while the latter was merely an intelligent dealer. We are further at liberty to state that for this information we are indebted to Dr. D. G. Elliot, who was in Paris at the time the collection was purchased, and in daily association with Dr. Bryant, and that they were in consultation respecting its value and character.— J. A. A.

Shelley's 'The Birds of Africa.'— Part I of Volume V[1] contains the families Oriolidæ, Sturnidæ, and Corvidæ (species 647–723). The European Golden Oriole (*Oriolus galbula*) is, singularly, the only migratory species of these families met with in Africa, the others being non-migratory. Fifty-seven species of Starlings are recorded, of which three are now extinct, and three are introduced species, two of which are from the Indo-Malay regions, and the other is the common Starling, imported from England into South Africa, and which has become firmly established in and about Cape Town.

The seven colored plates in this part illustrate eleven species, after drawings by Grönvold. It is a pleasure to note the rapid progress of this great work, the scope and character of which have been stated in notices of previous parts.— J. A. A.

Nash's 'Check-List of the Birds of Ontario.'[2] — The author states: "In the following Check List I have endeavoured to include all the birds which

[1] The | Birds of Africa, | comprising all the Species which occur | in the | Ethiopian Region. | By | G. E. Shelley, F. Z. S., F. R. G. S., &c. | (late Grenadier Guards), | author of "A Handbook to the Birds of Egypt," | "A Monograph of the Sun-birds," etc. | — | Vol. V. | Part I. | — | London: | Published for the Author by | R. H. Porter, 7 Princes Street, Cavendish Square, W. | 1906.— Roy. 8vo, pp. i–vi + 1–163, pll. col. xlxiii–xlix. Price 31s 6d net.

[2] Check List | of the | Vertebrates and Catalogue of | Specimens in the Biological Section | of the Provincial Museum | Birds | Department of Education | Toronto | [Seal] Toronto | Printed and Published by L. K. Cameron, Printer to the King's Most Excellent Majesty | 1905.— 8vo, pp. 82. Sub-title: Check List of the Birds of Ontario.

have been positively known to occur in the Province of Ontario. In cases where I have no personal knowledge of the record I have given the authority for it." The nomenclature and numeration are those of the A. O. U. Check List. The numeration is therefore not consecutive, nor is the whole number of species and subspecies stated. They number, by count, 324; with the House Sparrow, 325 — about 8 more than were given by McIlwraith in 1894. The species are concisely annotated with reference to their season of occurrence, relative abundance, breeding ranges, dates of migration, etc., while special stress is often laid upon their economic relations, as to whether beneficial or injurious and how. A paragraph is also given to the principal diagnostic characters of each of the orders and families, with an illustration representing some species of each family.— J. A. A.

'**An Ecological Survey in Northern Michigan.**'[1]—This Report gives the results of a natural history survey of the Porcupine Mountains and Isle Royal, in the Upper Peninsula of Michigan, made by a party from the University Museum, Michigan University, during the summer of 1904. The field party consisted of N. A. Wood (in charge), assisted by A. G. Ruthven, and Otto McCreary, N. F. Macduff, Max M. Peat, and W. A. Maclean, acting under the direction of Prof. C. C. Adams, curator of the University Museum. In an introductory note Prof. Adams describes the purposes and methods of the survey, and the results are embodied in a series of papers by the different members of the expedition. The ornithological parts of the Report are: 'The Ecological Distribution of the Birds in the Porcupine Mountains, Michigan' (pp. 56–67), by Otto McCreary, in which the physical characteristics of the 'stations' and 'substations' are described, with a separate enumeration of the birds found at each; and 'Annotated List of the Birds of the Porcupine Mountains and Isle Royal, Michigan' (pp. 113–127), by N. A. Wood, Max A. Peet, and O. McCreary. The observations in the Porcupine Mountains covered the period July 13 to August 13; number of species listed, 89. The Isle Royal observations were made from August 16 to September 5; number of species listed, 81. There are lists also of the plants, insects, mollusks, fish, amphibians, and mammals, the latter by Professor Adams, on the basis of the specimens and notes obtained by the different members of the expedition.

The work here undertaken is of an excellent character, and forms a good beginning, but nothing very conclusive can be expected from such a brief period of observation, and, as respects birds, conducted at a season of the year when they have for the most part concluded their home duties and are either given to wandering or are in actual migration.— J. A. A.

[1] An Ecological Survey | in | Northern Michigan. | — | Prepared under the direction of Chas. C. Adams. | — | A Report from the University Museum, University of Michigan, published by the | State Board of Geological Survey as part of the Report for 1905. | — | Lansing, Michigan | Wyncoop Hallenbeck Crawford Co., State Printers | 1906 — 8vo, pp. 133, with 21 illustrations.

NOTES AND NEWS.

EMILE OUSTALET, a Corresponding Fellow of the American Ornithologists' Union, died on the 23d of October, 1905, at Saint Cast (Côtes du Nord), France, in the 61st year of his age. He was the most eminent of recent French ornithologists. He was born in Montbeliard, Department of Doubs, on the 24th of August, 1844. After completing his studies at the Lycéum he devoted himself to the study of natural history at the Ecole des Hautes-Etudes in Paris. His first scientific publications related to the organs of resperation in the larvæ of Neuroptera and to the fossil insects of France. In the year 1873 he succeeded Jules Verreaux at the Paris Museum of Natural History, and from this time on devoted himself exclusively to the study of ornithology. The rich collections received from the French missionaries in China, and from the French colonies in Indo-China and Africa especially engaged his attention, and eventually he became admittedly the highest authority on the birds of China. Upon the death of Alphonse Milne-Edwards, in 1900, he became his successor at the Muséum and was appointed to the chair of Mammalogy and Ornithology, which position he held till his death.

In June of last year he attended the International Ornithological Congress held in London, and few of the ornithologists who then had the pleasure of meeting the great French scholar could have anticipated, as said by Hellmayr, in his recent biographical notice of Oustelet (Ornithol. Monatsberichte, XIV, No. 1, April, 1906, pp. 57–59, to which we are indebted for many of the facts here presented), that "a few months later the earth would close over his mortal remains." Although his health was far from satisfactory, the news of his death came as a great surprise. The last days of his life were unspeakably painful and death was a release. He was interred in his native city on the 29th of October.

A list of Oustelet's scientific publications was issued by Jules Rousset in 1900, in a special brochure, wherein 143 titles were enumerated, by far the greater part being ornithological. Among his more important works may be mentioned the following: 'Les Oiseaux de la Chine' (with Père Armand David), published in 1877; 'Etude sur la faune ornithologique des îles Seychelles,' in 1877-1878; 'Monographie des Oiseaux de la famille des Megapodiidés,' in two parts, 1880, 1881; 'Etudes sur les Mammifères et les Oiseaux des îles Comores,' 1888; 'Mission scientifique du Cap Horn, 1882–1883, Oiseaux,' 1891; 'Catalogue des Oiseaux provenant du voyage de N. Bonvalot et du Prince Henrie d'Orleans, à travers le Turkestan, le Tibet et la Chine occidentale,' 1893–1894; 'Les Mammifères et les Oiseaux des îles Mariannes,' 1895–1896; 'Notice sur la faune ornithologique ancienne et moderne des îles Mascareignes et en particulier de l'île Maurice,' 1897; 'Les Oiseaux du Cambodge, du Laos, de l'Annam et du Tonkin,' 1899. In addition to these larger works were many important papers in various scientific journals.

Oustelet was president of the third International Ornithological Congress held in Paris in 1900; he was also a corresponding member of the British Ornithologists' Union, the American Ornithologists' Union, the London Zoölogical Society, and honorary member of many French and foreign natural history societies, and of course many species were named in his honor. It also fell to his lot to describe many remarkable forms of bird life.

Victor Fatio, a Corresponding Fellow of the American Ornithologists' Union, died at his home in Geneva, Switzerland, March 19, 1906, at the age of 67 years. A notice of his life and labors will appear in a later number of this journal.

George F. Breninger, an Associate of the American Ornithologists' Union, and widely known as a collector and taxidermist, died at his home in Phoenix, Arizona, December 3, 1905, of arsenical poisoning acquired in the preparation of specimens. Mr. Breninger had recently been in the employ of the Field Museum of Natural History, and for some years past was a frequent contributor to 'The Auk,' 'The Condor,' 'The Osprey,' and other ornithological publications. He had collected extensively in Arizona, Mexico, and California. A paper in 'The Auk' (XXI, 1904, pp. 218–223), giving an account of 'San Clemente Island and its Birds,' is based on his experiences there as a collector for the Field Columbian Museum.

La Rue K. Holmes, an Associate of the American Ornithologists' Union, died at his home in Summit, New Jersey, May 10, 1906, in the 24th year of his age. He was the only son of Colonel B. P. and Georgiana K. Holmes, and was born at Summit, December 28, 1883. As a boy he early developed a strong interest in natural history, and later became passionately fond of the study of birds. Besides his association with the American Ornithologists' Union, he was a Corresponding Member of the Delaware Valley Ornithological Club, and contributed to 'Cassinia' for 1904 a carefully prepared paper on 'The Short-billed Marsh Wren (*Cistothorus stellaris*) in Eastern Pennsylvania and New Jersey' (*l. c.*, pp. 17–25). For several months in 1905 he was employed in the American Museum of Natural History as an assistant in the department of ornithology. He was a careful field observer, and gave promise of much efficiency as an ornithologist. His death was due primarily to an attack of pneumonia.

Mr. J. H. Batty, for the last three and a half years a collector of natural history specimens, chiefly birds and mammals, for the American Museum of Natural History, was killed instantly by the accidental discharge of his gun while collecting near Pijijiapam, in the southern part of the State of Chiapas, Mexico, on May 26, 1906. Previously he had collected extensively in the province of Chiriqui, Panama, and in the Cauca region of

Colombia. These collections also now belong in great part to the American Museum, acquired partly by purchase and partly as a gift from Mr. Batty.

Mr. Batty was born about sixty years ago at Springfield, Mass., where he received a high school education and fitted for college, but out-of-door pursuits and a fondness for adventure led him to early abandon his college course. He had a great fondness for natural history, and in 1873 was a collector of birds and mammals in the mountains of Colorado for the Hayden Survey. For many years he was in business as a taxidermist in New York City, and published a book on 'Taxidermy and Home Decoration' which has had extensive sale. Later he engaged in plume hunting, in the early days of that unfortunate business, for this purpose visiting Florida, western Mexico, Central America, and northern South America, which continent he traversed from ocean to ocean. For the last eight years he was engaged in legitimate natural history collecting, and secured many new species in Colombia and Panama, before his formal engagement by the American Museum. He was an expert hunter, and unusually successful in capturing the larger Carnivores. He was a man of great physical endurance, courage, persistency, and enthusiasm, and was probably familiar with a larger portion of the wilds of tropical America than any other traveller or explorer. During the last three years he has collected extensively in the States of Durango, Sinaloa, Jalisco, and Chiapas, Mexico, he having sent over 3000 mammals and about 6000 birds to the New York Museum as the result of his labors. At the time of his death he was under contract with this institution to continue his work across Guatemala to the Pacific coast, and thence transfer his field of operations to the still very imperfectly explored regions of southwestern Colombia. His untimely death is thus a serious loss to the institution he has served so faithfully. Personally he was a man of the most kindly nature, trustful, and thoroughly conscientious in his work.

Frank J. Thompson, formerly (1885–1896) an Associate of the American Ornithologists' Union, died in Culpepper, Va., his place of birth, May 29, at the age of 79 years. Mr. Thompson was a practical naturalist, and traveled extensively in the Old World tropics as a collector of living wild animals for zoölogical gardens. As stated in 'Forest and Stream' (of June 16, 1906): "Mr. Thompson was so well known as being better acquainted with wild animals than anyone else that he was appointed the first superintendent of the Zoölogical Garden of Philadelphia, having been summoned to take that place while traveling in Australia. Subsequently he became superintendent of the Zoölogical Gardens in Cincinnati and in Buffalo. Perhaps no other man ever had so great an experience with the wild game of the tropical world at large, and with his hunting experience was mingled a knowledge of the life-habits of these animals, which, if written out, would make the adventures of a multitude of famous book writers of these later days seem insignificant. Mr. Thompson had been a contributor to 'Forest

and Stream' for a period of more than thirty years. His writings covered a wide range of subject.... Personally Mr. Thompson was a man of gigantic frame and force, but of a nature so kindly and benevolent as to endear him to all with whom he was brought in contact."

It is a pleasure to learn that in the recent disaster to San Francisco and vicinity from earthquake and fire most of the large private collections of birds escaped practically unharmed, and that the natural history collections of Stanford University and the University of California suffered very little loss. The building of the California Academy of Sciences, however, was destroyed, with practically all its contents, except the types in the herbarium and a few others, saved through the thoughtfulness and courage of Miss Alice Eastwood, who entered the wrecked building and secured their removal before the fire reached it. The total destruction of this building with its rich contents is a great loss to science in general, and especially to Pacific Coast ornithology. "This collection," says 'The Condor' (May-June, 1906, p. 78), numbering in the neighborhood of 25,000 specimens, was unique in its extensive series of superbly prepared skins of sea-birds. The accumulation and study of these had long been the devoted aim of the Director of the Academy, Leverett M. Loomis. Another most deplorable feature of the disaster was the destruction of the valuable library, the ornithological portion of which contained many rare and expensive sets, such as complete files of 'The Ibis' and 'Journal für Ornithologie.... There is now practically no library on the Pacific Coast suitable for extended research reference in ornithology. However, the Academy's endowment remains, together with the insurance on the burned buildings, so that we may gradually look for the institution to gradually regain its scientific importance." Later information states that the rehabilitation of the Academy has already been entered upon with the promptness and energy that has characterized the people of the stricken city along every line of enterprise.

We learn from 'The Emu' (V, April, 1906, pp. 201, 202) that the 'cat question' is already a serious problem with bird protectionists in Australia. Mr. A. G. Campbell, one of the Hon. Editors of 'The Emu,' in writing of "the wild-cat pest — *i. e.*, the domestic cat gone wild," thus refers to the subject: "These injurious animals are now practically all over Australia. You find them on the shores prowling about sea-bird rookeries, and in the far interior thriving in rabbit-burrows. They are even to be found numerous upon the islands off the coast. After several generations in the bush-wilds these animals attain an immense size, and become so fierce that they have been known to attack human beings. Now, such great beasts need a quantity of food, and of what does that food chiefly consist? Why, of course, native birds and animals.

"How are we to combat this evil? 'It is a fine day; let us go out and kill something.' That is a Frenchman's view of the chief characteristic

of a Britisher. Well, if we must kill something, let us go out and kill cats. I do not mean our hearth-rug pets, but wild domestic cats in the bush. It would be keen sport hunting cats with rifle and dogs — if not too rough on dogs, judging by the size and spitefulness of some of the 'Toms' I have encountered. As is done in the case of foxes and wild dogs, let rewards be paid for cat-scalps.

"This suggests the ways and means — the only reasonable course begin that of a cat-tax. A collection of, say, one shilling per annum from owners of tame domestic cats would yield a sufficient fund to combat and keep in check the wild-cat nuisance in the country, and thus give our beloved birds a chance for existence.

"These few hasty thoughts are offered in order to create discussion on a subject which has been uppermost in my mind for some years regarding bird protection. Undoubtedly, if many of our highly interesting and beautiful birds, especially ground-loving species, are to be preserved from total extinction, we must, as a bird-lover's union, at no distant date face squarely a wild-cat destruction scheme."

In this country the licensing of cats, or a cat tax, with responsibility on the part of the owners of cats for their acts, and also for their welfare, has already become a public question, in respect to which decisive action cannot be taken too quickly. The extent of the destruction of young birds by even the pet cats of the household in country and suburban districts is appalling. A friend of both birds and cats has informed us of his method of lessening the evil; viz., to keep a close watch for the young birds as they leave their nests in his grounds, and gather up the helpless fledglings and place them in deep baskets and suspend the baskets from the lower branches of trees, where, inaccessible to cats, the old birds will continue to care for them, and when the young birds are strong enough to get out of the basket they are fairly well prepared to keep out of the reach of cats.

A NEW bird book, 'The Birds of Washington,' by William Leon Dawson, assisted by J. H. Bowles, is announced by the Occidental Publishing Company of Seattle, Wash., to appear December 1, 1907. The work will be in two volumes, and issued in several editions, varying in price according to the binding. It is announced to be "a complete, popular and scientific treatise on the birds of the State of Washington," and to contain "concise and accurate descriptions of plumages, nesting, range, etc., based so far as possible upon an original study of Washington material."

A WORK on the 'Nesting Ways of North American Birds' is in preparation by the Rev. P. B. Peabody, of Newcastle, Wyoming. From a letter by the compiler to 'The Condor' (May–June, 1906, pp. 78, 79), we quote as follows: "The scope of the work is the whole field of nesting habits, save for considerations of shapes, colors, sizes and textures of eggs; this portion of the field being already fairly well covered. Everything available in

print has now been drawn upon except the great files of bulletins and proceedings which are to be found only in the larger city libraries; and not, by any means, in even all of these. The work now being done is in this direction, and it is a work both laborious and costly.

"In the preparation of large masses of material, never as yet adequately found in print, the Preparator of the proposed book has enjoyed the generous help of just forty bird students and field workers. Of these, twenty-five are men of national reputation in this domain. When this work is ready for the press, the student who shall look to it for information concerning times, places, number of eggs, nesting conditions and distinctive habits of birds during the nesting season may confidently look to find, in 'Nesting Ways,' the vital facts, so far as known, for all North American birds. Here, in reasonably brief space, he will readily find through careful lists and indexes that which would cost him no less than two hundred dollars, if bought in original form, and which would involve, even then, literally months of perplexing and wearisome research. The illustrations will be full, and wholly original. A large number of the subjects portrayed have never before been photographed; and there will be found in this work not a few facts that are absolutely new to science.

"The book in question, incubating in the Preparator's mind for many years, has not been undertaken with any thought of personal gain. Prepared, throughout, with a view to the needs of the great host of younger bird students, the convenience of the scientific student has been as carefully borne in mind. And every possible effort will be made to keep the price of the work within the scope of humble purses."

In this connection the author makes an appeal for full and authentic data concerning the nesting of some thirty to forty species of birds, mostly West Coast forms, a list of which he presents, and states that credit will be given for any aid rendered.

Some years since, Otmar Reiser, curator of the Bosnia-Herzegowina Laudesmuseum in Sarajevo, began the publication of his 'Materialien zu einer Ornis Balcanica,' of which Volume II, 'Bulgarien und Ost-Rumlien,' appeared in 1894, and Volume IV, 'Montenegro,' in 1896. After a lapse of ten years, Volume III, 'Griechenland und die griechischen Inseln (mit Ausnahme von Kreta),' is announced to appear in 1906, and Volume V, 'Serbie,' in 1907, to be followed soon after by Volume I, 'Bosnia-Herzegowina,' completing the work, which is published by Adolf Holzhausen, Vienna. Each volume in large octavo, illustrated with both colored and plain plates and a map of the region treated.